THE SRI LANKA JOURNAL OF
SOUTH ASIAN STUDIES

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EDITOR'S NOTE

**The Sri Lanka Journal of South Asian Studies
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Volume 03 Number 01 2017 of the Sri Lanka Journal of South Asian Studies continues to deal with research problems related to the South Asian context. As per the vision of the pioneers of the Journal the present issue accommodates six articles.

Since its inception in 1978 the Journal has been published with a break in the eighties due to the unrest that prevailed in the Northern and Eastern part of Sri Lanka and it has resumed its publication since 2015. We are unable to publish it on a regular basis due to various problems like lack of facilities, difficulties in getting articles in English and getting them reviewed by experts outside the University, proof-read and printing due to dearth of professionals with English knowledge.

The present volume consists of articles related to problems that emerged in the city planning of Jaffna town and land use of the town dwellers in the Vavuniya district, Sri Lanka in the post-war context. Two other articles address the problems faced by the students at the tertiary level in becoming proficient in the second language, English. There are two more articles on the issues related to political decisions taken by the Indian Tamil leaders in relation to ethnic issue of the Sri Lankan Tamils and the last one on the social impact assessment of road widening project in the Mullaitivu district, Sri Lanka. Thus, articles concentrate on Sri Lankan and Indian contexts.

We welcome more articles related to the South Asian context. We have received articles from India and Bangaladesh for the next issue. We hope to release the issues in time to keep to our target of two an year.

Dr.K.Shriganeshan
Editor.
30.03.2020.

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SPATIAL SITE REFERENCE, ANALYSIS AND IMPROVEMENT: JAFFNA TOWN CENTER DEVELOPMENT UNDER POST WAR CONTEXT

Kabilan Suntharamoorthy

Abstract

Jaffna is one of the districts and capital town of Northern Sri Lanka. Jaffna town is a historical and cultural space of Sri Lankan Tamils and Hindus. It has been functioning as a hub for administrative, commercial, educational, health, recreational and transportation service for entire province by accommodating public and private investments since 1800s. The space was evolving as production of societies in respect to their core values and customs until mid 1970s. Westernization and modernization scenarios are highly influencing the re-development pattern and function of Jaffna town space after the end of the civil war in 2009. The Jaffna town center is defined as a site to refer spatial and functional changes in every single plot due to rapid development under post war context. The study focused to identify and delineate the site that highly observes the spatial pattern and functional changes under the rapid development context, to analyse the spatial issues that cause for the spatial pattern and functional change of the identified site, and to develop comprehensive spatial model for improving the identified site. Site planning process is mainstreamed in the entire investigation. Temporal pattern and functional and morphological studies are used for site selection, delineation and reference. Situation, user and spatial analysis are carried out to identify the issues and potentials of the site. Site improvement plans are designed based on the results of CAP workshop and Space Syntax analytical models. Flash flooding, traffic congestion, underutilization of land resource and water contaminations are crucial issues. Developments are happening arbitrarily due to the private ownership and not much centralized planned development occurred in the space. Three decades of war is a major factor for delaying on formulating rules, regulations and policies relevant to spatial and functional development. The study concludes that Jaffna general hospital and bus stand are core elements in the site. Improvement of hospital should be carried on towards the north direction and bus stand has to be transformed as well structured bus terminal to accommodate state and private buses. Jaffna Municipal Council and Urban Development Authorities have to pay high attention on formulating and implementing by laws and controlling and managing the spatial and functional development properly with private and public participation.

Key words: Site, Space Syntax, Morphology, Interpolation, Contamination, Integration

Introduction

'Space', a term that well used in the field of Earth science to interpret the physical arrangement of natural phenomina in the Earth planet. It has been widely used in the field of Social sciences to define the physical space that inhabited by diverse communities and societies in terms of their functionality for last couple of centuries. Site, a physical space, defines as an area that contains complex functionality with the inhabitation of diverse societies in the form of user.

Space, that is "the space of social relations, the space between us as members of society which implies how we are situated in relation to one another" (Henri Lefebvre - 1974 / 1991). 'Social Space' that is "the area inhabited by a group(s) which are the fundamental units of social life, were conceived either as territorial entities or as classes, and the organizations which structure social relations such as families, associations and bureaucracies attracted practically no attention at that time" (Emile Durkheim and his team from Chicago school). Social Space' is something conceived as the area where a group or a class is living (Karl Marx).

Jaffna is one of the districts and capital town of Northern Sri Lanka. It has been functioning as a hub for administrative, commercial, educational, health, recreational and transportation service for entire province by accommodating public and private investments since 1800s.

Jaffna town is a historical and cultural space of Sri Lankan Tamils and Hindus. The town settlement pattern, interior and exterior designs of physical features, and surrounding environment had been highly reflecting the socio – economic uniqueness of inhabited society even though the town space emerged during the colonial period. The space was evolving as production of societies in respect to their core values and customs until mid 1970s. The society driven development has not been continue after 1980s because of continuous displacement of people, destruction of physical structures, and life uncertainty due to the ethnic conflict.

During the period of Cease fire agreement from 2002 to 2006, between Sri Lankan Government and LTTE, timely space was created for emerging from social and physical destruction. Limited number of public and private investors who were financially sound utilized that space for regaining from destructions. But it did not exist longer due to the cancellation of cease fire agreement. Then the town has started to rapidly re-develop after the end of the civil war in 2009.

Development scenarios in these two occasions are not same as past. Westernization and modernization scenarios highly influence the re-development pattern and function of Jaffna town space. There is no intellectual expressiveness needed to understand this radical change. It is clearly reflected by the space itself.

On one hand, it becomes as a subject for debating on whether this change could be suitable or unsuitable, acceptable or unacceptable and adoptable or unadoptable

under the socio – cultural perspective of traditional Jaffna. There are positive and negative arguments in both sides.

On the other hand, however the development is ongoing due to increased investment, and market competition. It raises two questions. Firstly, is this structural change of space aligning with development norms and guidelines in order to utilize resources sustainably to produce effective space?. Secondly, is this functional change of space fulfilling the needs of users without creating major issues in the space and society?

The answer is obviously 'no'. These rapid changes make the physical and functional system more complicated in adverse direction. Lack of system integration, underutilization of resources, and contamination of water are crucial issues caused by the lack of development norms and guidelines and inefficiency of authorized institutions, private ownership, and several other factors in the town space.

Therefore, the changing scenarios are alarming about spatial issues that highly affecte the efficient and effective function of the town and notify the timely need of an integrated plan for the pattern and functional improvement of Jaffna Town. Jaffna town center, a smaller area with natural sensitiveness and high density of physical and functional integration, is rooted to pay site attention for developing plan through carrying comprehensive research.

Background

The Jaffna town center, known as ''Yazlpaanam or Yazlpaana Paddinam'', lies in the southern part of Jaffna peninsula between 9036' - 9042' North, and between 79059' - 80003' East. It is the highest order town not only in the Jaffna district but also in the Northern Province. It is 400 km away from Colombo, Capital city of Sri Lanka, by road. The area of Jaffna town center is 20.0 Sq km. It is longer in the east – west direction, measuring a maximum of 06 km in length; while its width in the north – south direction varies from 3.5 to 4 km. The Jaffna lagoon forms the southern boundary of the town.

Jaffna was historically goes back around 104 A.D. The historical evidence says that, the kings and people who were living in the northern part of Sri Lanka had come from Southern India and settled. After the rule of the last King Cankili, the Jaffna kingdom (1215 AD to 1624 AD) came under the rule of the Portuguese in 1617. Then, the Dutch came and introduced law and order to this region and built the roads across the district. The Jaffna fort which was built by the Dutch has been appearing as a significant evidence of the Dutch colonization. Then, the British came and ruled for a long time. They built connecting roads from all parts of the Jaffna district to the fort.

The existing road system was established by the Dutch and the British. The town center grows rapidly after establishing the road network from all parts of the district to the Jaffna fort area. The Jaffna town center had been isolated from other highest town centers, which function well in other parts of Sri Lanka, from 1980s to 2002

due to the civil war. The linking road was closed. During the period of Cease - fire agreement, the Jaffna town center was growing rapidly again due to the opening of the A9 road.

At present, the Jaffna city center is growing faster because of the increased investments of local, national and international investors. Almost, all banks and financial institutions which function in Sri Lanka have opened their branches in the Jaffna town center.

Nowadays, the Jaffna city center is highly agglomerated by plenty of business and service activities. Diverse types of business and services institutions, medical, educational and financial institutions, electronic and electrical showrooms, hardware, software and auto mobile shops, vegetable, fruit and Palmyra product market, textiles, jewellery and fancy shops and whole sale grocery shops, occupy the Jaffna town center space to function at all levels. There are full of engagement of new investors among both success and failure stories regarding the functionality of services in the Jaffna town space.

The Jaffna town center growth pattern is continuously increasing with range of complexity. Therefore, proper plans and guidelines are timely needed to accommodate and regulate them properly.

Literature review
Space, site and spatial aspects on theoritical perspective

The theories on Space and Site (Spatial aspects): The term 'Space' conceptualizes and defines differently in diverse platforms because of the wider usage of it. In Cartesian terminology, the term 'Space' can be defined a three dimensional property with length, width and height. At the same time the term 'Space' is referred as socially inhabited area by group of people along with their functions in sociological terminology.

Condominas (1980) says that the term 'Social Space' was firstly used by Emile Durkheim, who is known as the father of Sociology, at the end of nineteen century. Emile Durkheim and Chicago school define the term of 'Social Space' as the area inhabited by a group(s), the fundamental units of social life. They were conceived either as territorial entities or as classes, and the organizations which structure social relations such as families, associations and bureaucracies attracted practically no attention at that time. For Marxist, 'Social Space' is something conceived as the area where a group or a class is living. Their thought explains the role of space in the development of social consciousness. The term 'Social Space' was used by Marcel Mauss (1904 – 1905) and Maurice Halbwachs (1938) immediately after the origin. It came into familiarization in the research and academic platforms after 1950s. Chombart de Lauwe, Henri Lefebvre and Georges Condominas refer this term 'Social Space' for their scholarly works. Accordingly, the 'Social Space' is still the space occupied and transformed by a social group.

Henri Lefebvre (1974 / 1991) defines the term 'Space' that is "the space of social relations, the space between us as members of society which implies how we are situated in relation to one another". He looks at the 'Space' in three dialectical arenas that are practically produced, then perceived, and experienced by society with their senses as lived. Accordingly, he defines the 'Space' as a "social product because; it does not exist in itself, but produced". Therefore, 'Space' stands in the order of social reality.

Massy (2005) defines the term 'space as the sphere of relations and encounters, which implies politics.' Space is required for 'simultaneous heterogeneity'. Kipfer (2008) says that 'Space' is colonized of everyday life of an individual or society. Accordingly, the term 'Space' is conceptualized in terms of that broader social reality, rather than a three-dimensional Cartesian concept in this study.

The Production of Space: The production of Space Theory was founded by Henri Lefebvre, French scholar, in 1974. The book 'La production de l'espace' was written, in French language, by him to explain the theory. The theory gained peak of popularity among scholars after translating the book into English with the name of 'the Production of Space' by Donald Nicholson - Smith in 1991.

The theory tries to explain the relationship between the 'Space', physical environment of the inhabited society and 'Society', living organism in the limited space. The main arguments of the theory are;

(1) There are three levels of space from very abstract, natural and more complex according to the production of them. These three dialectical levels are defined in dual perspectives. 'Spatial Practice', 'Representations of Space', and 'Spaces of Representation' are defined in one perspective and they are respectfully defined as 'Perceived Space', 'Conceived Space', and 'Lived Space' in other perspective. These levels have to be understood as being fundamentally of equal value. It means that space is at once perceived, conceived, and lived. It is called as the 'triad of space' by him.

Perceived Space or Spatial Practice means that the space is perceived in the common sensical mode with all its contradictions in everyday life. It is a social product and it embraces the idea of social practice.

Conceived Space or Representations of space / discourses on space: The conceived space is discursive regimes of theories, spatial and planning professions and expert knowledge which is conceived of space.

Lived Space or Spaces of representation / Discourse of Space: The lived space is, as it might be, moments of presence. (Table: 1)

Table 1: Summary of the Production of Space Theory

Spatial Practice	Representations of Space	Spaces of Representation
Physical Space	Mental Space	Social Space
Perceived	Conceived	Lived
Daily routines align with routes between places	Scientists, planners, technocratic sub dividers	Inhabitants and users

(2) Social space is a social product.

(3) Every society produces its own social space. The social production of urban space is fundamental to the reproduction of society.

The production of space is a fragmentation of space which contains both mental and real to bring together.

The Neoclassical Model theory (Economical aspects): It argues about how capital accumulation and new technologies become the dominant forces affecting economic development. This approach was pioneered by Robert Solow, who was awarded the 1987 Nobel Prize for this and other contributions to economic growth theory.

The model describes an economy in which a single homogeneous output is produced by two types of inputs, capital and labour. Capital and technique changes are the new ingredients in this growth model. It assumes that in the growth process the technology remains constant and the role of capital was dynamic. Capital goods include physical structures such as factories and houses, equipment such as computer and machines and finished goods and goods in process.

The theory explains the functions of economic growth in the following way. If K = single kind of capital good, and L = is the number of workers, then K/L is equal to the quantity of capital per worker. It calls as Capital – Labour Ratio in general forums. This is aggregate production function for the neoclassical growth model without technological change as Q = F (K, L).

In the absence of technological change and innovation, an increase in capital per worker would not be matched by a proportional increase in output per worker because of diminishing returns to capital. Capital deepening would lower the rate of return on capital while raising real wages.

The theoretical view of conflict on environment (Environmental aspects):

Conflict theorists founded that the most serious conflicts are rising between environment and consumers. Population and harmful technological innovations have been viewed as factors for environmental issue by some Conflict theorists.

Allan Schnaiberg (1992) says, many sociologists draw on the conflict perspectives and blame the dominant social paradigm of advanced capitalist societies for threatening our environment.

Susan Stonich (1989) suggests that environmental destruction in southern Honduras is intricately connected to the problem of poverty, unemployment and conflict within and between nations.

G. Miller (1972) who, they ask, is more to blame for environmental deterioration: the poverty–stricken and food–hungry populations of the world or the energy–hungry industrialized nations? It can be answered by the following information;

Conflicts they identified that 25 percentage of the world's population who are inhabited in the West-Industrialized nations are responsible for 85 percentage of the world wide consumption.

In USA, around 6 percentage of the world's population, consume more than half of the world's nonrenewable resources and more than one – third of all the raw - materials produced.

Insatiable production and consumption contribute directly to the demand for more and more landfills.

Space, Site and Spatial aspects on applicational perspective

In 2016, a study was conducted on the topic of Balancing history and development in Seattle's Pike/Pine Neighborhood Conservation District by Manish Chalana.

The study tries to examine the question that weather planners and preservationists can successfully work together to maintain its neighborhood character, as recognized by its architecture, uses, culture, night life and housing in Seattle - Pike/Pine, under the context of transformation of building usage after the end of the war, through practicing Neighborhood Conservation District (NCD) approach.

Pike/Pine comprises roughly 35 square blocks along Seattle's East Pike and East Pine Streets, on the southwestern slope of Capitol Hill, east of the city's retail core. Racially, it is a reasonable microcosm of Seattle, but has higher levels of younger adults than Seattle overall. It is highly concentrated lesbian, gay, bisexual, transgender, and queer (LGBTQ) population. Pike/Pine was the city's main "auto row" district in the early 20th century (James, 2012). After World War II, as many auto businesses migrated to the suburbs, Pike/Pine accommodated an eclectic array of affordable businesses and services in converted auto-row buildings as well as housing in apartments and single-resident occupancy hotels.

NCD is one of the alternative approaches to historic district that attempt to maintain unique and vibrant places for diverse groups.

The study concludes that Planners and preservationists have varying perspectives on the type of spatial transformations occurring in Pike/Pine. Planners argue that they are promoting sustainable development by concentrating growth into urban areas and preventing sprawl.

Preservationists are happy with many adaptive reuse projects, but still bemoan the loss of substantial amounts of historic fabric from both recognized and overlooked historic buildings. Despite three amendments in five years, the Pike Pine Overlay Conservation District (PPCOD) has not been entirely successful in maintaining neighborhood character. Even as many façades have been saved at the expense of historic buildings, the neighborhood is rapidly gentrifying, with the transformations ultimately making Pike/ Pine less unique, and perhaps less safe for lesbian, gay, bisexual, transgender, and queer (LGBTQ) populations.

Communities considering an NCD to retain the neighborhood character of older neighborhoods should consider a tighter and tiered incentive structure to encourage balance between old and new, and work to ensure that the implementation of the ordinance aligns closely with preservation goals. As the case of Pike/ Pine demonstrates, the NCD has not fully resolved the persistent challenges of gentrification that threaten the cultures and communities who helped shape the neighborhood. As a result, many long-time patrons and residents of Pike/Pine would claim that the alliance between planning and preservation seems as uneasy as ever.

Review of this particular article explores that, how a traditional view of the same space can transform totally into another modern view according to the evolution of society. Secondly, it explains how far the adaption and transformation is important for preservation of urban monuments and traditional buildings. Thirdly, how a society accepts or accommodates them into this conflicting environment. Then it explores the role and responsibility of planners and preservationists to working together in the space transformation initiatives to avoid conflict occurrences. Finally it advised to balancing old and new structures under the preservation and modern development context.

In 2014, a descriptive and prescriptive study was done on conflict transformation in post war Sri Lanka by Abdul Jabbar and Fatima Sajeetha.

The study tries to identify the transformation of conflict after the end of internal civil war. It found that both of more positive and some negative transformations have happened in the places and people since the end of the war.

It concluded, as positive transformation of conflict, that demand of minorities is changed, increased number of infrastructure development projects; resettlement and rehabilitation efforts are carrying out. The democratic space is open for all.

At the same time, as negative signs, the conflict raises between civilians and armed forces, increasing of violence in different forms of kidnapping and robbery. It especially mentioned about the conflict that is turned between different ethnic groups based on the religion.

Review of this particular study explore that, with the end of the war, the government and responsible persons say that, the ethnic conflict between the Tamils and Sinhalese was resolved in Sri Lanka. It means there are no weapons, no groups, and no voices. But what happened actually was that conflict is controlled by the power. The root cause for conflict is still there and it has not been discovered properly until to date. The controlled and existing conflict is transformed into different form to come out. Therefore, the post war Sri Lanka has the possibility to a new form of conflict again among the societies.

Objective and method

The research was conducted to identify and delineate the site that highly observes the spatial pattern and functional changes under the rapid development context, to analyse the spatial issues that cause for the spatial pattern and functional change of the identified site, and to develop comprehensive spatial model for improving the identified site.

At preliminary stage, built pattern and functional studies and morphological study techniques are used to identify sites. Spatial and functional comparison analysis was performed to select and delineate a site for analysis and improve.

In the detail survey, morphological study used as basic technique to do site reference. Selected site is divided into nine plots (plot- A, B, C, D, E, F, G, H and I) based on the road network to easily understand the physical and functional features of the site and collect the data and information in the site (Figure: 01).

Figure: 01 – Divided plots in the selected sites

Source: Google Earth, on 18.12.2015 at 05.00

Topographical map of Jaffna (1966, 1978 and 2006) and Land use map of Jaffna town (1981) were considered as source maps. They were used to carry temporal analysis to detect land use changes.

Existing road network map was produced from the topographical map. Other thematic maps were developed by using Plot by plot scanning survey technique to understand the existing pattern and function of the site and analyze. Building data were collected and demarcated according to the physical boundary of them individually. Every single shop is demarcated with their boundary even though located in a building. Water bodies, drainages and storm water channels and public water supply network data were collected and mapped.

There are four issues identified in the site. Data relevant to areas that are affected by flash flooding, traffic congestion, underutilization of land and contamination of water collected from each plot by plot scan survey and put into maps.

Spatial locations of incomplete drainage and storm water channel network, drain and storm water stagnating areas into the channels, storm water channel used as waste water channels, encroached and land filled ponds, building over the storm water and drainage channels, grid pattern of city center with narrow roads which are having junction within 150 meter of distances, uploading and unloading areas in front of the road side shops which are highly involved in wholesale business, public service centers are located within the small extent of area and on street parking facility provided by the Jaffna Municipal Council for three wheelers, and motor cycles were identified and mapped individually.

Land value of each plot was mapped by using spatial interpolation technique. Small grid pattern of the land plots and land invisibility, inaccessible land plots and sub divisions, front side development and traditional way of building construction are shown by images to justify the issue of underutilization of land properly.

Sea water inclusion into the inland water sources, sewerage water penetrated into the ground water layers, solid and liquid waste disposal into the surface water sources and channels, liquid wastes penetrated into the ground water layers and Lack of water retention and restoration issues are justified with the support of literatures that are highly investigated in water issues of Jaffna.

Root cause analysis was performed to find the causes for identified four crucial issues in the site. Users of the site were clustered and performed user analysis to investigate user perspective on site issues, potentials and needs. Especially CAP workshop technique was adopted to conduct user analysis effectively. Further spatial analysis was performed to illustrate the connectivity pattern, flow, issues and potentials in the site and surrounding areas. Especially spatial interpolation and space syntax techniques were used to perform spatial analysis (Figure: 02).

Finally, based on the results of analysis, site designs were developed and tested physical, economical and social feasibility to improve. The entire methodology is shown in a flowchart below (Table: 02). Three advanced spatial modeling and analysis software platforms, Arc Map 10.2, UCL Depth Map 10, Auto CAD 2013 were used for spatial scanning, modeling, map preparation and analysis.

### Table: 02 – Methodology of site analysis and improvement
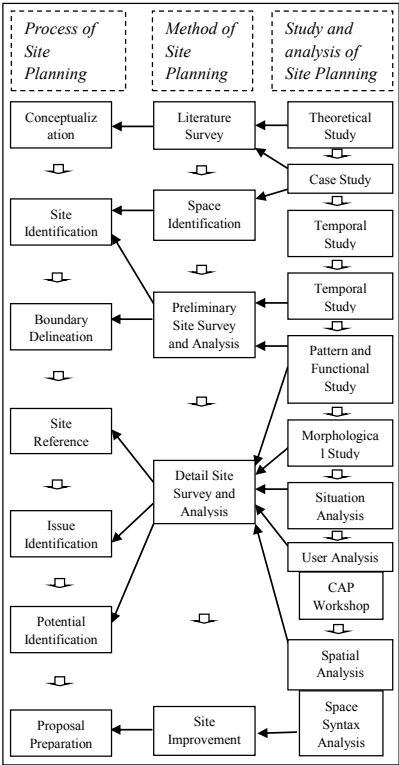
Source: Field Study, 2015

Site delineation

Spatial pattern of the Jaffna District has been taken into consideration for selecting and delineating the suitable site for analyzing and improving. The 'built fabric' and 'functions' of the space are defined as two criteria for clipping suitable site.

Firstly, the clipping was done based on the built fabric criteria (Figure: 02).

Figure: 02 - Built fabric of the Jaffna district
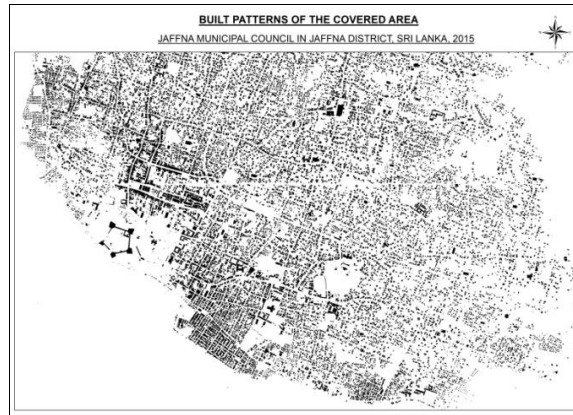
Source: Department of Survey, 2015

The map shows how buildings are randomly distributed in the space at present and provides a clear understanding of the existing spatial pattern of built-up environment in the Jaffna District.

There were three key areas identified as high densely built-up areas according to the spatial pattern of built-up environment (Figure: 03).

1. Cross Street, Kurunagar and surrounding area.

It is an area which is located along the Jaffna lagoon. 70% of the built-up land utilized for grid pattern of settlement and 25% of the land is underutilized. 08 ponds are located with high encroachment.

2. Town Center and surrounding area.

It is an area which contains 60% of the built-up land including 50% for commercial and 10 % for settlement purposes. 25% of the land is underutilized. 05 ponds are located with high encroachment.

3. Paasaiur, Navanthurai and surrounding area.

It is an area which contains 60% of the built-up land utilized for settlements and 35% of the land is underutilized. A pond is located within the area.

Figure: 03 - Built fabric of the selected Sites
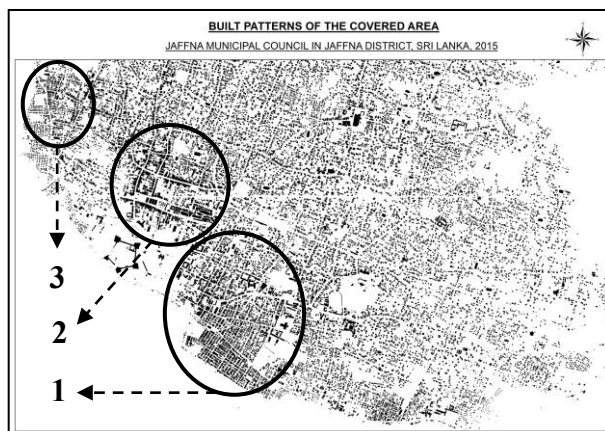
Source: Department of Survey, 2015

Secondly, based on the Built fabric demarcation, land use, connectivity and socio-economic functions (criteria-1) are defined to evaluate functionality of the areas (Table: 03).

Table: 03 - Functionality of the selected sites

1. Functions of Cross Street, Kurunagar and surrounding area.
a. Settlement
b. Fisheries for livelihood
2. Functions of Town Center and surrounding area.
c. Settlement
d. Commercial
– *Departmental stores and shops - Grocery shops, Super markets, Stationary*
– *Banks - State banks, Private banks*
– *Insurance and financial institutions - Semi government and Private institutions*
– *Markets - Whole sale, Vegetable market, Local products market (Palmira products)*
– *showrooms and service centers – Electrical, Electronic, ICT, Vehicles*
– *Hardware stores*
– *Jewelry complexes*
e. Connectivity
– *Country level - A9 National highway*
– *Regional level - KKS road, Palaly road, Point Pedro road, Manipay road, Karainagar road, Island road and Kaithady road*
– *Local level - Grid pattern of roads and Pannai bridge*

f. Advance services
– *Health - General hospital, Private Clinics, Laboratories, Testing and channeling centers, Pharmacies*
– *Education - National schools, Nursing school, Medical faculty (extension) of, Jaffna University, Private IT training centers, Public library*
– *Recreation - Beach and Beach park, Three star (awarded) hotel, Private accommodations , Cinemas, Cultural hall, Stadium*
– *Communication - Competitive communication service providers, Communication and browsing centers*
g. Historical, Cultural and Archeological
– *Public library, Clock tower*
– *Dutch fort, Statues of the Kings, Hindu temples, Buddhist temple, Churches and Mosques*
3. Functions of Paasaiur, Navanthurai and surrounding area.
h. Settlement
i. Commercial
– *Fundamental needs*
j. Fisheries for livelihood

Source: Field Study, 2015

The town center and surrounding area (area 2) is selected as a site due to high density of built fabric pattern and land use, commercial and connectivity function (Figure: 04).

Figure: 04 – Satellite view of the Site

Source: Google Earth, on 18.12.2015 at 05.30

Site is bounded by Standley road on the North, Palaly road on the East, Vembady road on the South and K.K.S road on the West. In addition to that 50 meter of exterior buffer zone of each road is included into the boundary.

Site reference

At present, built-up areas are highly distributed all over the site and located along the roads and lanes. Most of the underutilized spaces are created at the back side of the buildings. It is clearly demarcated by applying Nolli map technique to the site (Figure: 05).

**Figure: 05** – Nolli map of the Site

Source: Field Study, 2015

It provides a pre-visualization and understanding of the spatial arrangement and settlement pattern in the site, especially to provide a visual understanding about, how these buildings are distributed in the space.

Around 60%, 10% and 05% of the land is utilized for settlement, physical infrastructure and water bodies respectively. 25% of the land is underutilized due to the improper spatial arrangement (Figure: 06).
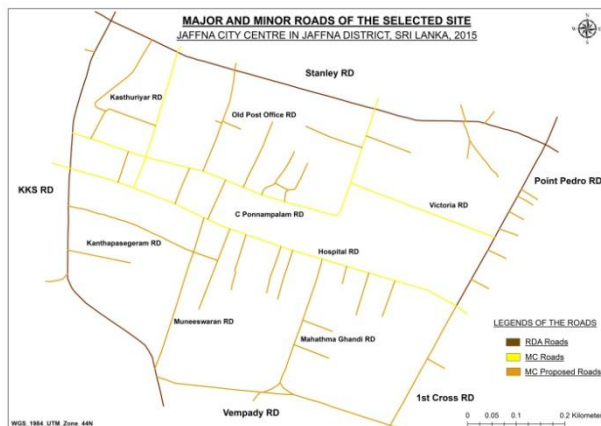
Figure: 06 – Land Use Pattern of the Site
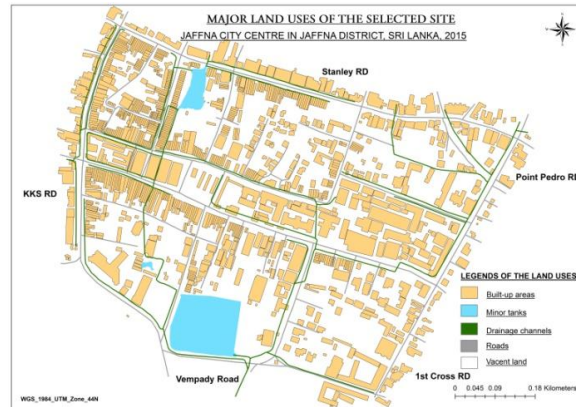
Source: Field Study, 2015

Grid pattern of roads and corned junctions that were built in the Dutch and British era exist with small improvements to make effective accessibility (Figure: 07).
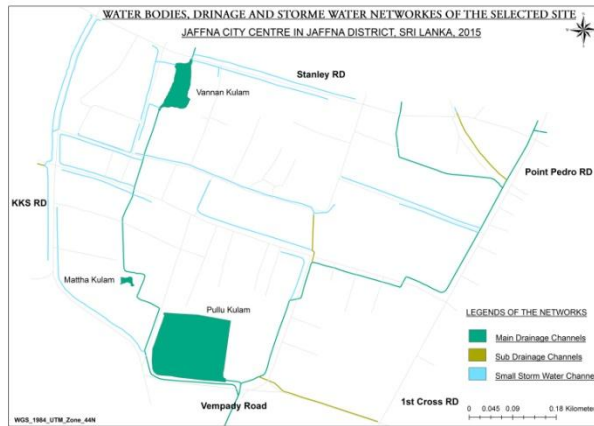
Figure: 07 – Road Network of the Site

Source: Field Study, 2015

Existing water bodies, drainage channels, and storm water network system are not effectively interconnected and properly managed (Figure: 08).

Figure: 08 – Water infrastructure of the Site

Source: Field Study, 2015

Land values are extremely high in the town center area. The range of value differs from 01 to 12 million per perch within the site (Figure: 09).

Figure: 09 – Land values of the Site
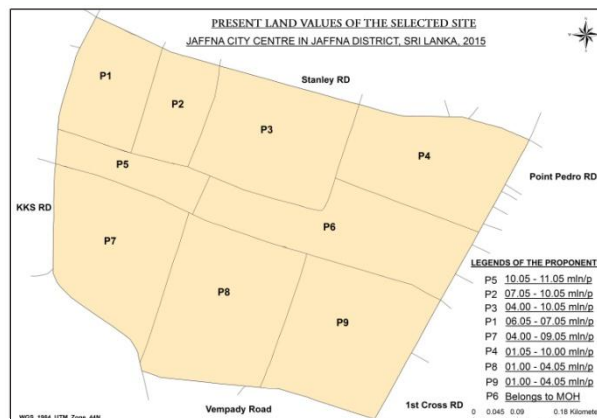
Source: Field Study, 2015

Site analysis

There are four crucial issues and seven potentials identified under the context of continuous and sustainable function of a town.

Issue- 1: Flash flooding

Site experiences flash flooding issue due to low or high volume of rainfalls. It highly occurs along the roads (Figure: 10).

Figure: 10 – Flash flooding areas of the Site
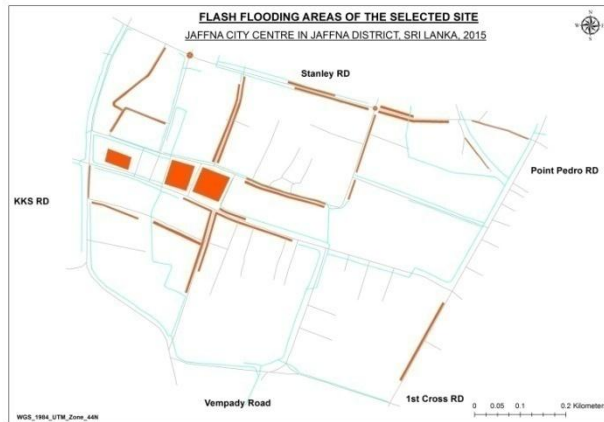
Source: Field Study, 2015

Incompleted drainage and storm water channel (Figure: 11), drain and storm water stagnation into the channels (Figure: 12), usage of storm water channel as waste water channels (Fugure: 13), encroachment and land filling of pond (Figure: 14) and constructions over the storm water and drainage channels (Figure: 15) are identified as causes for flash flooding in the site.

Figure: 11 – Incomplete drainage and storm
water channel network of the site
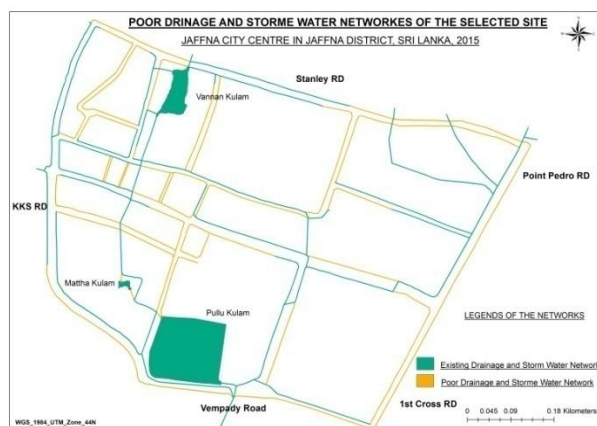
Source: Field Study, 2015.

Figure: 12 – Drain and storm water stagnation
in the channels of the site
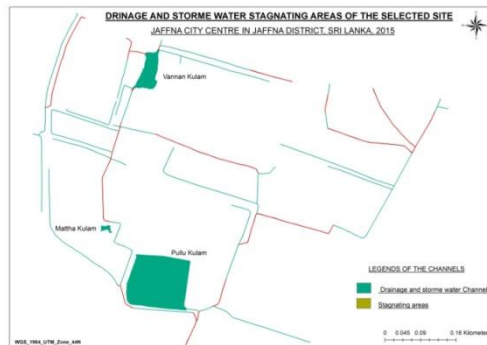
Source: Field Study, 2015

Figure: 13 - Existing storm water channels
used as waste water channels of the site
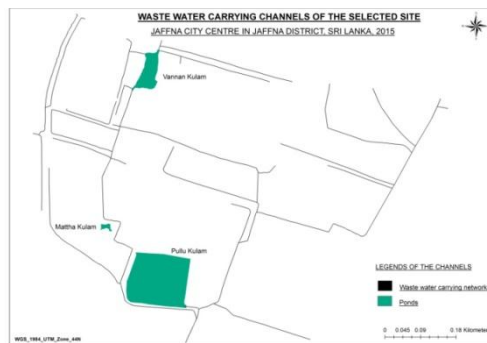
Source: Field Study, 2015

Figure: 14 - Existing storm water channels
used as waste water channels of the site
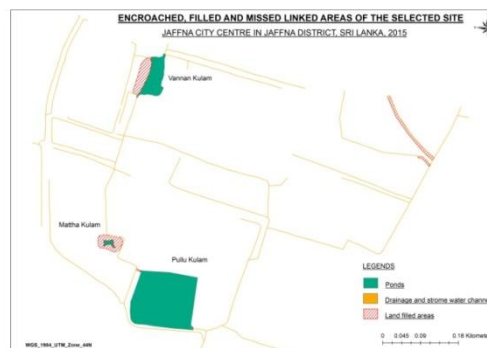
Source: Field Study, 2015

Figure: 15 – Constructions over the storm
water and drainage channels of the site
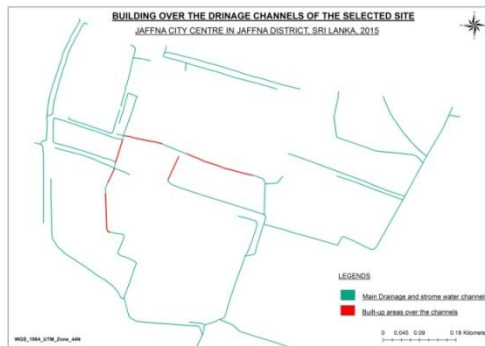
Source: Field Study, 2015

Issue- 2: Traffic congestion

Site is experiencing the traffic congestion issue from 7.30 am to 8.00 pm per day except Sunday. High volume of traffic congestion observed in five junctions and three main roads (Figure: 16).

Figure: 16 – Junctions and Road - Traffic
Volume of the site.
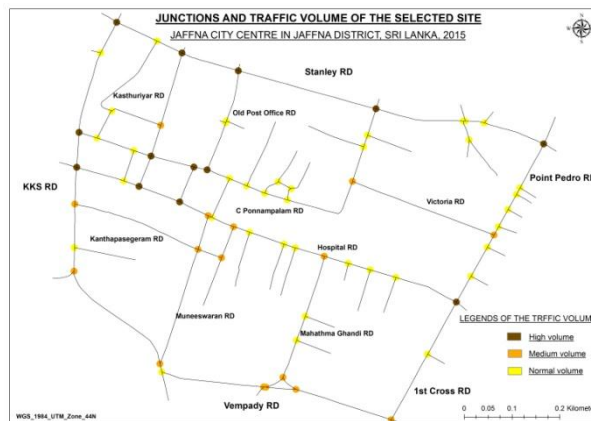
Source: Field Study, 2015

Grid pattern of the city center with narrow roads which are having junction within 150m of distances (Figure: 17), uploading and unloading activities in front of the road side shops which are highly involved in wholesale business (Figure: 18), public service centers are located within the small extent of city area (Figure: 19) and on street parking facility provided by the Municipal Council for three wheelers and motorbikes (Figure: 20) are causes for traffic congestion in the site.

Figure: 17 – Grid pattern of city center with
narrow roads of the site
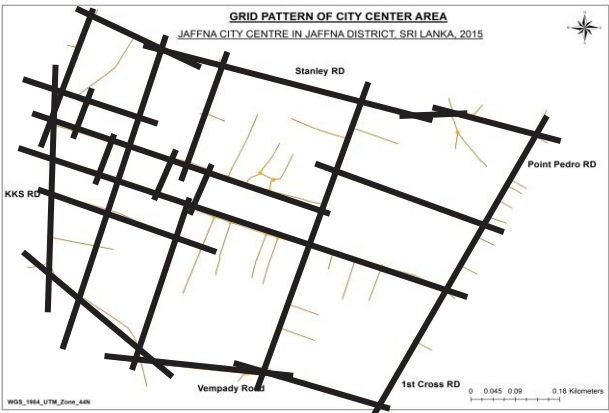
Source: Field Study, 2015

Figure: 18 – Uploading and unloading
activities in front of the road side shops of the site
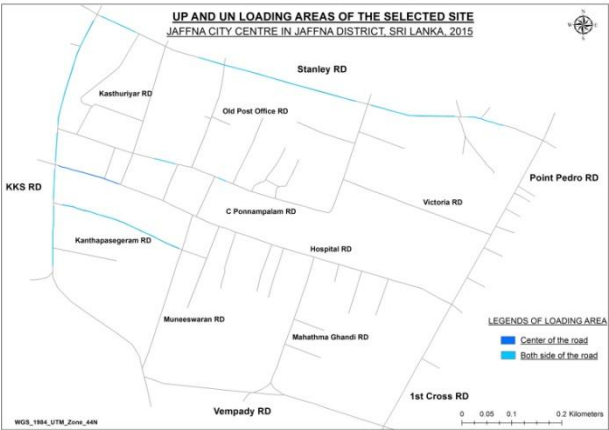
Source: Field Study, 2015

Figure: 19 – Distance between Nodes of the
site

(in Meters)
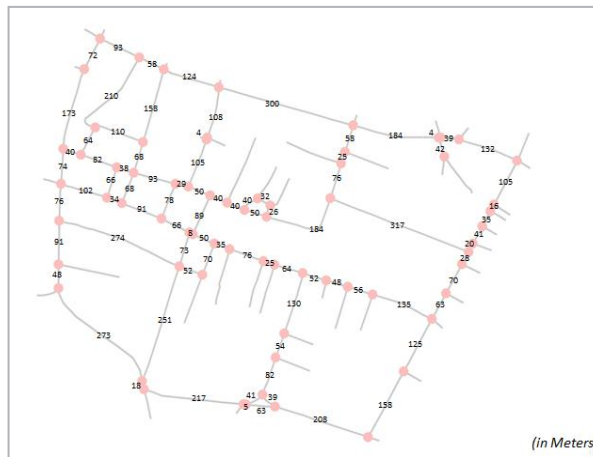
Source: Field Study, 2015

Figure: 20 – On Street parking facility of the site

Source: Field Study, 2015

Issue- 3: Underutilization of land resources

Land use patterns have been creating underutilization of land issue in entire site since 2006 (Figure: 21). Small grid pattern of the land plots and land invisibility, in accessible land plots and sub divisions (Figure: 17 & 19), private ownership and front side development, traditional way and model of building construction (Figure: 21) and high value of the land and property (Figure: 09) are identified as causes for this issue. Under the urban context floor areas are increasing but the utilization of them is flowing in adverse direction.

Figure: 21 – Underutilization of land
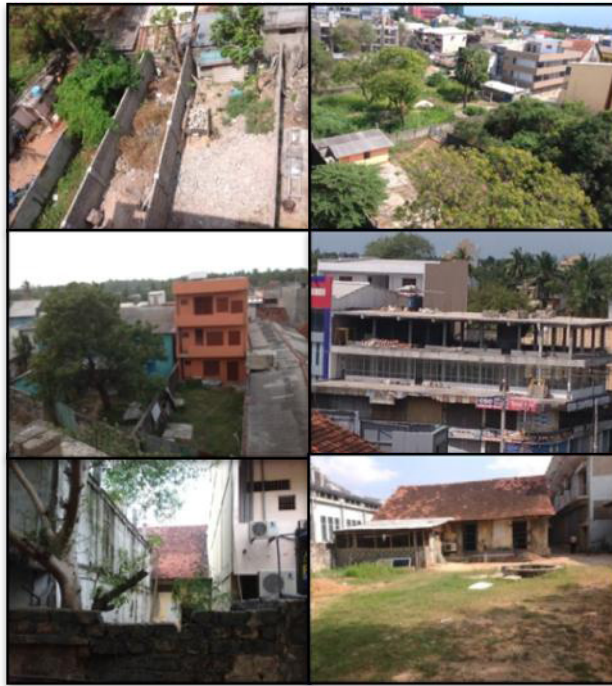
Source: Field Study, 2015

Issue- 4: Contamination of water

The selected site as the town which consists of high density of population and volume of water usage, private wells and individual water supply system, mixed land use patterns, has been experiencing water contamination issue since mid 20th century. Quality of groundwater is continuously deteriorating.

Sea water inclusion into the inland water sources, sewerage water penetrated into the ground water layers, solid and liquid waste disposal into the surface water sources and channels, liquid wastes penetrated into the ground water layers and lack of water retention and restoration are identified as primary causes for water contamination in the site.

Water contamination was tested and proved by number of scholars and professionals. According to their literatures, major water quality problem, identified in the 1950s, and highlighted in the1960s, is seawater intrusion into the groundwater system (Balendran et al. 1968).

In the north zone of the Peninsula where the intensive study was carried out during the period 1973 - 1976 in an area of 55 sq. miles, indicates that 39% of the wells became brine (K, Shanmugarajah 1993). 80% of the wells in the Peninsula are affected by high nitrate concentration (Gunasekaram 1983).

The electrical conductivity was $300 > 22000S$ cm-1, pH rate was 7.0 reflecting the alkaline nature of the limestone aquifer and coastal region identified as a high salinity area and some built-up areas in coastal zone have higher chloride levels. Nitrate concentration value range is < 8 to > 165 mgl-1 NO_3- with a mean value of 25 mgl-1 NO_3-. Selected agricultural and urban well, reach value of more than 100 mgl-1 NO_3-, A single well in Jaffna town demonstrated a high nitrate level 115 mgl-1 NO_3- (Rajasooriyar, Mathavan, Dharmagunawardhane & Nandakumar 2002).

A significant contributory factor to the high level of chloride in the cultivated land areas in the extensive extraction of groundwater in support of cultivation that has caused the lowering of groundwater levels and a rise in the saline water body (Figure: 22). (Arumugam 1969, Nandakumar 1983).

Figure: 22– Spatial distribution of Chloride

Spatial distribution of Chloride showing the contour for the years 1979 to 1982 and for 1997 for both August and December
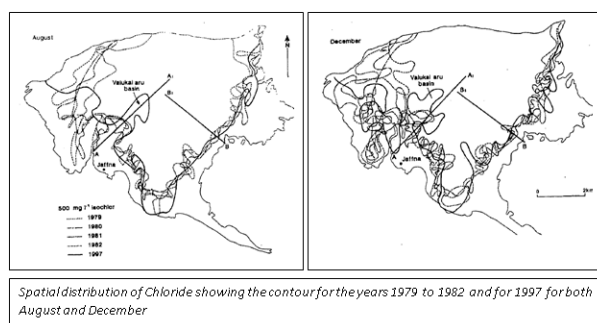
Source: Groundwater Quality in the Valigamam
Region of the Jaffna Peninsula, 2002.

Chloride concentrations are very high in the sandy calcareous formation of the coastal regions, increasing from 500mgl-1 > 4000mgl-1. But the WHO permissible level for chloride is 500mgl-1Cl-1. The pattern of chloride concentration is a clear indication of seawater intrusion.

Most of the contamination happens due to improper planning of soak away pits and dug wells (Gunasekaram 1983). Distance between latrine pit and dug well are not maintained as recommended, particularly in highly populated urban areas (Table: 04).

Table: 04 – Distance between pit latrines and dug wells in Jaffna Municipal Council area

Distances (m)	Percentage of Dug wells
< 1.5	5.7
1.6 – 3.0	8.0
3.1 – 4.5	5.7
4.6 – 6.0	6.8
> 6.1	73.5

Source: Groundwater Quality in the Valigamam
Region of the Jaffna Peninsula, 2002.

Analysis – 1: Root cause analysis

It is conducted to find out the causes for identified four crucial issues in the site (Figures: 23, 24, 25 & 26)

Figure: 23 – Root causes for Issue - 1
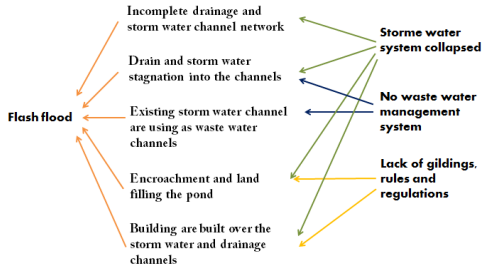
Figure: 25 - Root causes for Issue - 3
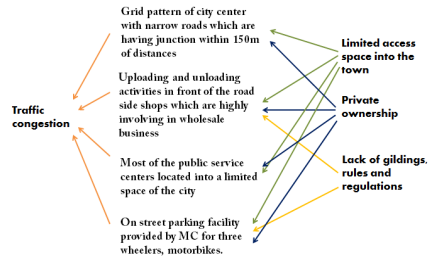
Figure: 24 – Root causes for Issue – 2
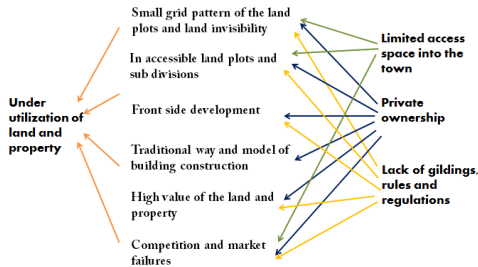
Figure: 26 – Root causes for Issue – 4
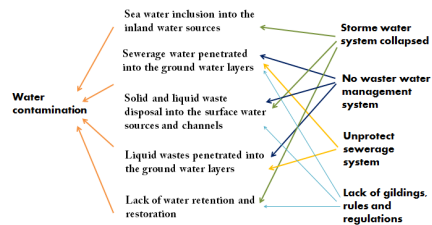
Figure: 27 – Common root causes for four crucial issues
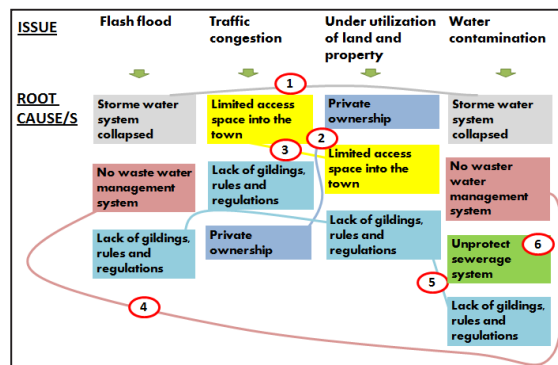
According to the result of root cause analysis, six causes are identified for those major four issues. They are collapses in storm water system, high ratio of private ownership, limited accessible space into the town, no waste water management system, lack of guidelines, rules and regulations, and unprotected sewerage system.

Analysis – 2: User analysis

Wider range and volume of users utilize the site every day. They are commonly categorized as service providers, commuters, transit, inhabitants, visitors and Investors (local and national). Further, users are defined as pedestrians and public transport dependents, cyclists, motor cycle users and other private vehicle users in terms of mode of transportation of them. Before 1995, during the war, pedestrians and cyclists were highly engaged within the site. Then in 1995, public transport dependents were increased because of the re-interference of government in administration of the Jaffna district. Use of motor cycles has suddenly increased due to the improved connectivity with Indian vehicle market in Sri Lanka since 2000.

Users: Pedestrians and Public transport dependents; at present, the private vehicle users are gradually increasing, but not reached the peak but pedestrians and public transport dependents are very much utilizing the site in order to fulfill their health and commercial needs. Especially Pedestrians, who as commuters, workers, visitors and service obtainers, are playing major role to keep the town active.

Issue: Pedestrians do not have effective walkways with linkages. They are struggling on route because of the traffic congestion (Figure: 28).

Figure: 28 – Pedestrian movement in the site
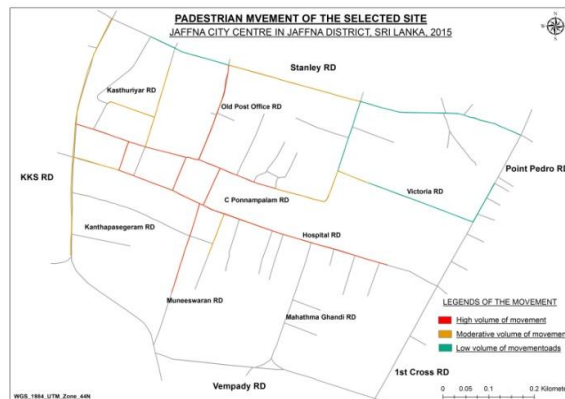
Source: Field Study, 2015

User: Service providers; the market vendors are playing major role at local level by serving the people who are approaching town for their health, transport and commercial needs. Vegetable, fruit and Palmyra product vendors are the identity of the site.

Issue: But, the market vendors are facing issues due to the surrounding development at present. It was identified through cap work shop which was done in the market area with the 48% of the participation of vendors (Table: 05).

Table: 05 − Results of CAP workshop

Identified Issues on CAP workshop in the Vegetable and fruit market	Users %
The existing vegetable and fruit market area not having visibility to the roads due to the establishment of new cloth payments around to the market premises with the permission of the government authorities.	100
The existing vegetable and fruit market area not having accessible space to the vehicle entrance to upload and unload the vegetable and fruits due to the establishment of payments in the boundaries of the market premises with the permission of the government authorities.	100
Allocated space for every single vegetable and fruit vendors is too small to carry business (5f x10f). Therefore, a vendor rent out minimum two plot area to maximum four plot areas. But they wanted to pay Rs.50/= for a plot of area per day if they do the business or not. If they rent out four plot areas, have to pay Rs.200/= per day.	83
Vending space is unsecure. They cannot store thinks into the market at night or off days due to the reason that, it is an open area with temporary roof. The roof is also already damaged.	90
There are new competitors in the outside of the market premises. The government authorities allowed the new fruit vendors to do their business outside.	100
The existing market area doesn't have the facilities of storing, sanitation, water supply, waste management and parking for workers.	78
The existing area space is not enough to improve the facilities and creating business opportunities to them due to the location and development of the surrounding business areas.	100
The corner areas of the market are used for illegal activities like smoking at the day and night, drinking at the night and urinate at the working time also by the customers of market and surrounding business.	100
Irresponsible decision making of the ruling authorities. They provided the surrounding areas of the market premises to textiles and fancy. There was a long toilet pit located in the east boundary of the market. Authorities allowed building construction on the top of them. Nowadays the function of the toilet is totally stagnated.	100

Source: Field Study, 2015

No visibility, no accessibility, outside competitors, poor facilities, no proper space for improvement and irresponsibility of the ruling institutions are the crucial factors for the ongoing problem.

In addition to that, new vending areas, which are allowed to the usage of new vendors within the city center also do not have basic facilities. These are temporarily located along the roads. It is another problem to the city center as well.

Analysis – 3: Space syntax analysis

It is conducted to find out the connectivity of the grid pattern of the roads that are located in the site and surrounding areas (Figures: 29 & 30).

Figure: 29 – Road network with road space of
the site.

Source: Field Study, 2015

Figure: 30 – Connectivity of the site.
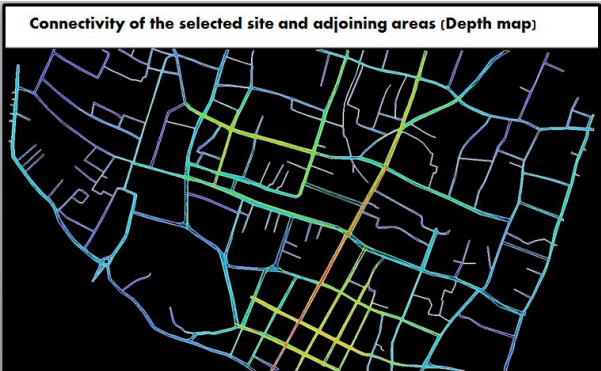
Source: Field Study, 2015

HH and P values show the integration between the roads and nods (Figures: 31 & 32).

Figure: 31 – Spatial Integration of the site.

Source: Field Study, 2015

Figure: 32 – Spatial Integration of the site.
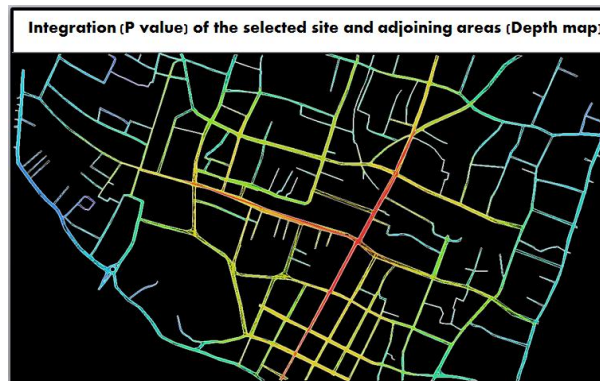
Source: Field Study, 2015

Potentials: Strategic location and connectivity, wider range of vacant land, water bodies and channels, compact model of functions and services, consistently increasing demand for commercial activities, high density of commuters as customers and consumers, and high volume of pedestrian movement.

Site improvement

Vision to improve the site is 'to be a Green field City of Northern Sri Lanka'. It was formulated based on the network analysis.

The five objectives for site improvement are to re-integrate the existing storm water system to function effectively, to establish a comprehensive model of waste water management system, to revise and introduce the acceptable and accountable rules and regulation for managing private ownership on resources, to create an integration between the green and blue, to construct conducive and loveable environment for users, and to improve the active and multi-functional space for service providers of the city center.

The strategies for site improvement are creating inter connection between the ponds, storm water and drainage channels which are presently located into the site and adjoining area, promoting land owners to landscaping the backside which is underutilized, facilitating to improve the water retention and restoration process, providing suitable and harmful spaces to the users for better delivery services in terms of rules, regulations and good governance principles, and restricting norms with efficient guidance to achieve sustainable development through integrity of natural resources.

There are three projects identified to improve the connectivity of roads to ensure effective and efficient transportation within the site, to improve integrity between green and blue to ensure effective and efficient function of the natural environmental system in the site, and to build user-friendly space to ensure high volume of satisfaction among diverse users within the site.

Constructing new linking roads, widening the existing roads, constructing walk ways, and revising the regulations are four plans proposed to improve connectivity of roads to ensure effective and efficient transportation within the site.

Reconstructing the existing storm water channels, reconstructing the drainage channels and link with every land uses, landscaping for cerate walk ability, and revising the regulations are another four plans proposed to improve integrity between green and blue to ensure effective and efficient function of the natural environmental system in the site.

Constructing the Jaffna vegetable model market complex, modernizing the bus terminal for public transport system, relocating the vehicle parking, and allocating space for the extension of the hospital are another four plans proposed to build user-friendly space to ensure high volume of satisfaction among diverse users within the site.

Proposed plans and locations of them in the site

(Plan: 1 and 2) Constructing new roads, creating linking roads and widening the existing roads (Figure: 33) will increase the connectivity and accessibility. On the other hand, it will reduce the traffic congestion within the site.

Figure: 33 – Proposed new roads, linking roads
and widening the existing Roads
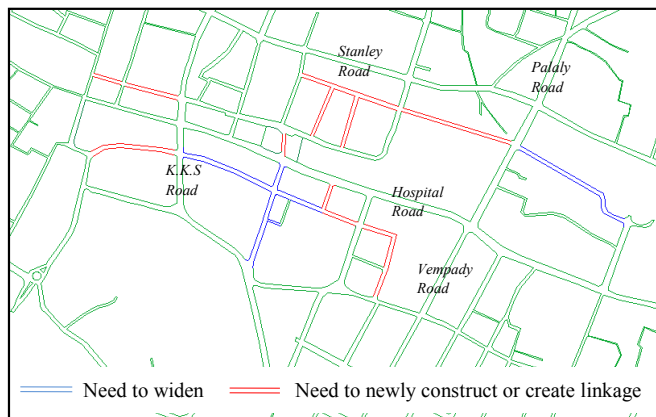
Source: Field Study, 2015

Connectivity and accessibility improvement after the re-arrangement of roads are tested by space syntax analysis (Figure: 34).

Figure: 34 – Connectivity improvement in the
site
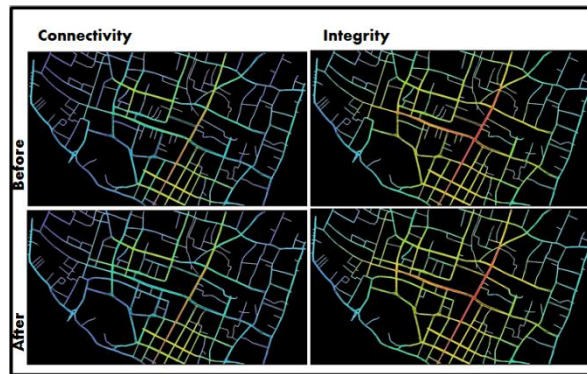
Source: Field Study, 2015

(Plan: 3) Constructing path ways for pedestrians will create user friendly and livable environment into the site. It will ensure the safety movements of pedestrians who mostly occupy this site in order to receive medical and health services. It will reduce the vehicle movement that causes to decrease traffic congestion within the site and surrounding areas. On the other hand, it will create spaces with walk ability and livability. Safe accessibility will ensure within the site. Pedestrian path ways will construct in 10, 05 and 03 feet according to the volume of pedestrian usages (Figure: 35).

Figure: 35 – Proposed pedestrian walk ways
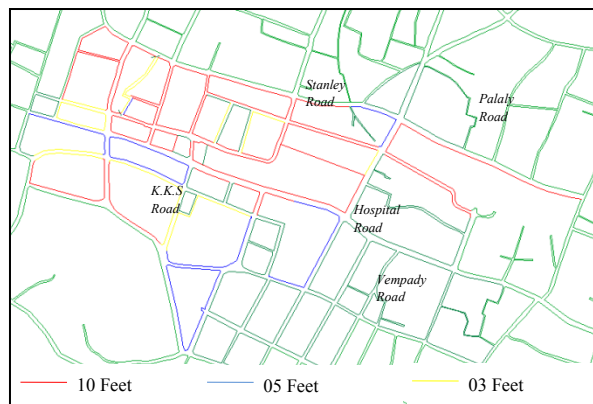
Source: Field Study, 2015

(Plan: 4) Reconstruction of the existing storm water and drainage channels and creation of linkages with every land use will increase the integrity between blue and green environment within the site. It will reduce the water related issues through ensuring water restoration and retention within the site (Figure: 36).

(Plan: 5) Construction of Jaffna vegetable model market complex with all infrastructure facilities according to their different requirements will create effective space for the vegetable and fruit vendors in the site. It will create wider opportunities to small scale business people to improve their livelihood. It will locate at the middle area of the site in order to provide efficient and effective service for all users (Figure: 37).

Figure: 36 – Constructing new linking roads and widening the existing Roads

Source: Field Study, 2015

Figure: 37 – Constructing new linking roads and widening the existing Roads
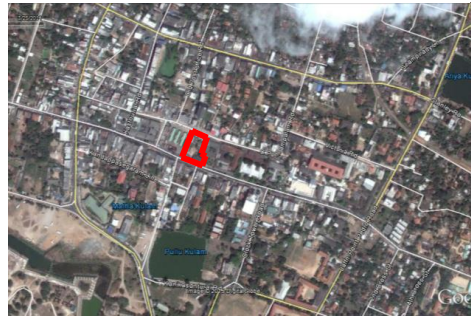
Source: Field Study, 2015

There are no possibilities to establish a Jaffna Model Market Complex into the existing market premises. Because of the five reasons existing market is located up next to the high volume of traffic congested "Sathira" junction. If a new market will be constructed in the same place, it will create very high traffic congestion in the Hospital road, the KKS road, the C Ponnampalam road and the Sathira junction. On the other hand, it will create negative impact on the effective function of the market and surrounding businesses in future. Providing accessibility is too difficult into the present space due to the small and narrow roads in the north and the south. As explained above, the existing market land space is not enough to establish a Model Market Complex with all infrastructure facilities of storage, vehicle access, electricity, fresh water, sanitation, storm and waste water management and solid waste management. Visibility and accessibility are important requirements for a successful function of a market to attract the customers. It cannot be fulfilled by existing market land space at present and future too. Providing equal opportunities and space to all, inside market vendors and outside market vendors, is an important responsibility of the planner. But the existing space is not enough for all vendors, like outside vendors.

Therefore, an ultimate space was found into the Jaffna town center according to the market demand and requirements, requirement of business people and valuable customers, land use suitability, and land value. The new location was found up next to

the Jaffna General Hospital premises. The boundaries of the site are C. Ponnampalam road in the North, Jaffna General Hospital in the East, Hospital road in the South and, Jaffna Central Bus Stand on the West.

Total extent of the site is 1300 Square meters (Figures: 38 & 39). The site is going to have buildings, parking areas, cross roads for vehicle movement and uploading - unloading, pedestrian walk ways, power supply network, water supply network, drainage network, solid waste dustbins and sanitation network (Table: 06).

Figure: 38 – Constructing new linking roads
and widening the existing Roads
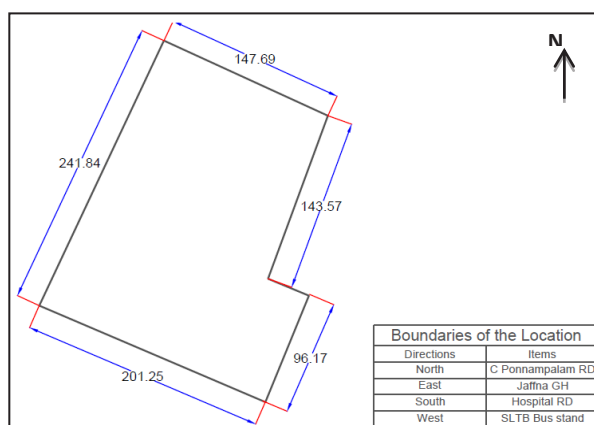
Source: Field Study, 2015

Table: 06 – Constructing new linking roads and
widening the existing Roads

Contents	Area of site contents in the site		Size (Sq ft)
Buildings	03	Model Market Blocks	25,200
	02	Public toilets Blocks & water tanks	900
	01	Power unit	100

Small parking areas	02	light vehicle parking	1,900
	05	Two wheelers parking	2,680
Cross roads	02	Up-loading & un-loading	7,200
	02	Vehicle movement	9,600
Pedestrian walk ways	03	Inside the building	1,100
	05	Outside the building	1,015
Power supply network	01	Power unit	100
	03	Market blocks	25,200
	02	Public toilet blocks	900
Water supply networks	03	Market blocks	25,200
	02	Public toilet blocks	900
Drainage network	06	All building blocks	26,200
	02	All cross roads	9,600
Solid waste dustbins	03	Market buildings	25,200
Sanitation network	02	Public toilet blocks	900

Source: Field Study, 2015

Three blocks are going to be built within the site. Every single block is going to be built as two stories buildings with floor extent of 8,400Sqft that; ground floor extent of a block is 5,250Sqft and first floor extent of 3150Sqft. Altogether, the market building floor extent is 25,200Sqft.

This building design is something different from common designs of two-storey buildings. This design is highly focused on business requirement and customer's satisfaction. Especially in Jaffna, customers are not like to go to upper floors to buy goods and get services. They like to get every thing in the ground floor level. On the other hand, the visibility and accessibility of those upper floor also do not satisfy the customers and business people.

Figure: 39 – Blueprint of the Jaffna Vegetable
model Market
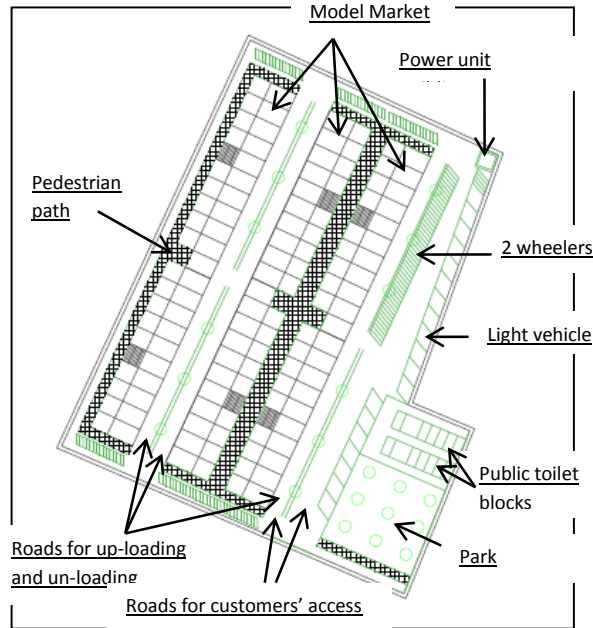
Source: Field Study, 2015

The new design considered the needs of the customers and business people. The ground floor has 18 shops and the first floor has 19 shops. The extent of a single shop in the ground floor is 200Sqft. The extent of a single shop in the first floor is 150Sqft. Every shop has a 50Sqft vacant space in the back side of the ground floor. The solid waste dustbins are going to be built within the space.

Two public toilet building blocks are to be construced for men and women. It is planned to serve for the business people and customers of the market. Extent of a block is 450Sqft. Total extent of the public toilet building is 900Sqft. Every single block plans to have one washing room (100Sqft), one toilet for differently-abled people (50Sqft), five for abled people (50Sqft x 5). Both blocks have different 10ft and 5ft paths to access.

One power unit building is going to be built on the site. The extent is 100Sqft. It will function as the main electricity receiving and internal supplying unit. This building must be constructed with the all protective layers.

(Plan: 6) Construction of modernized bus terminal for public transportation will create user-friendly public transport system and reduce the traffic congestion that is created by bus stand and private bus parking in the streets. The bus stand is going to be transformed and modified as a terminal with supporting physical and social infra-structures. Buses will be parked outside the town. Government and private buses will just stay for maximum 15 minutes to collect and drop the passengers. The existing bus stand will move 50 meters in east direction to link the Old post office road and the Muneswaran road in order to increase accessibility in the site (Figure: 40 & 41).

Figure: 40 – Roads for entering and exiting
public transportation buses
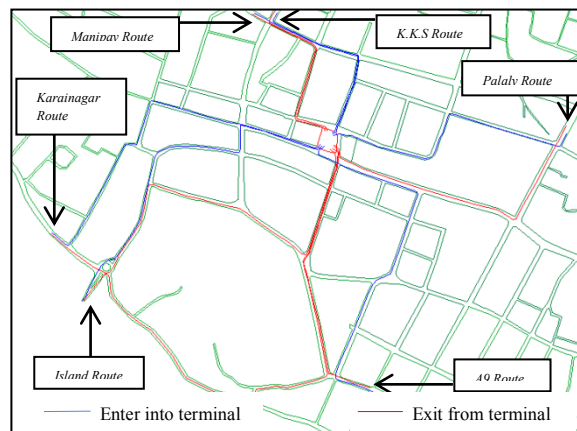
Source: Field Study, 2015

There will be two entrances and two exits for bus terminal. The bus route is designed to cover the entire site by at least once. According to this model, movements of the buses will not be a crucial factor for creating traffic within the site.

Figure: 41 – Bus terminal and entrance and exit
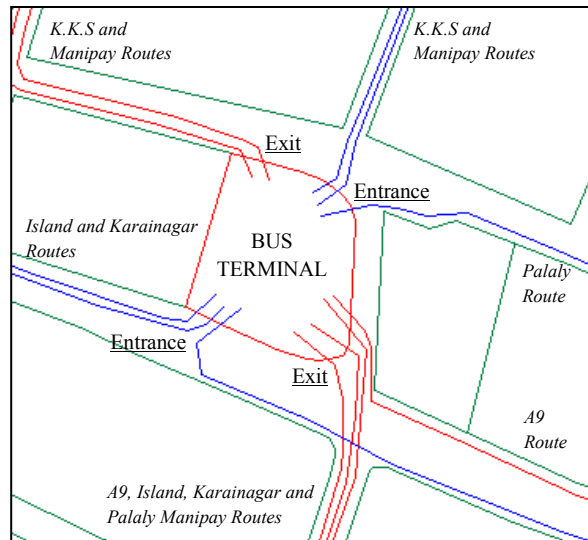
Source: Field Study, 2015

(Plan: 7) Establishment of vehicle park will reduce the issues caused by on-street and off-street parkings of light and heavy vehicles. It will increase the walk ability and safe accessibility within the site.

At the beginning, these areas will function as open parking. This space will develop with multi-storey parking facilities after five years of time (Figure: 42).

Figure: 42 – Proposed parking areas
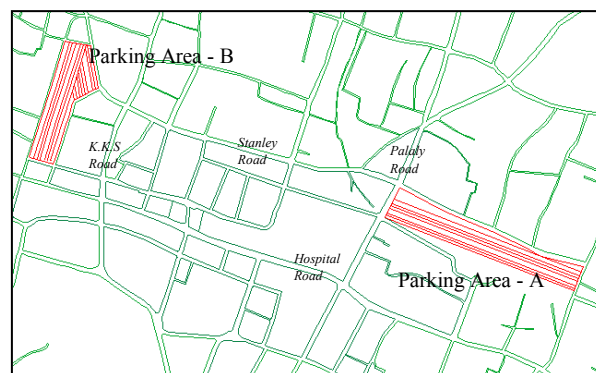
Source: Source: Field Study, 2015

The Jaffna general hospital is known as the heart for the supporting health, commercial, and administrative functions of the Jaffna town. It is a phenomenon that has been determining and influencing the evolution of the site and its function since 1940s. Definitely, the town will decline if this hospital is moved away due to the functional dependency of investments made around hospital.

(Plan: 8) The Hospital expansion is needed to provide improved services to the users who come from all over the places in the Northern Province. The hospital has been expanding on the east – West direction until 2018, which is not appropriate according to the natural location, spatial pattern and functional arrangement of the site. It has been creating spatial issue like traffic congestion in the site since 2000s.

It highly affects the connectivity function within the site. Two roads, C.Ponnampalam and Mahadma Gandi road, were partially closed and three junctions were fully blackout their functions due to the expansion of the hospital (Figure: 43).

Figure: 43 – Hospital premises and connectivity issues
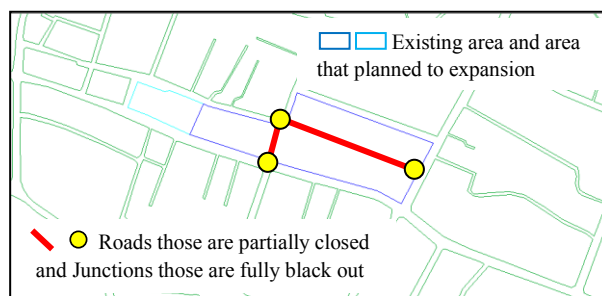
Source: Field Study, 2015

Commercial functions of the site are highlydeveloped along the Hospital road and Stanleyroad. The hospital expansion is also happening between and parallel to these two roads. Only three cross roads, the Old post office road, the Kasthuriyar Road and the Clock tower Road, link these major two roads. The Old post office road and the Kasthuriyar Road are allowed to access in one direction. Further, the Kasthuriyar Road only connects both the major roads directly in single direction. Remaining two cross roads start from the Stanley road and joining in the Old power house road and meet the Hospital road by a small cross road.

This pattern of hospital building distribution and road network development highly affect the connectivity. Therefore, the expansion of the hospital in the west – east direction has to be controlled and should be continuing in the south – north direction if needed.

In order to carry out this expansion, private lands which are located in the north side of the Victoria road have to be encroached by paying compensation.

 The existing Victoria road space will be occupied by the hospital and modified as walk way in order to serve the people who need to access the railway station and the bus terminal quickly. The New Victoria rode will be constructed at the new north boundary of the Hospital. Six entrances will be available to access the hospital at a time. Every single entrance will allocate for accessing different medical and health services. The second main entrance for accessing the Intensive Care Unit has to be established in the west boundary of the hospital via walk way in the site (Figure: 44).

Figure: 44 – Proposed area for expansion of
Jaffna General Hospital
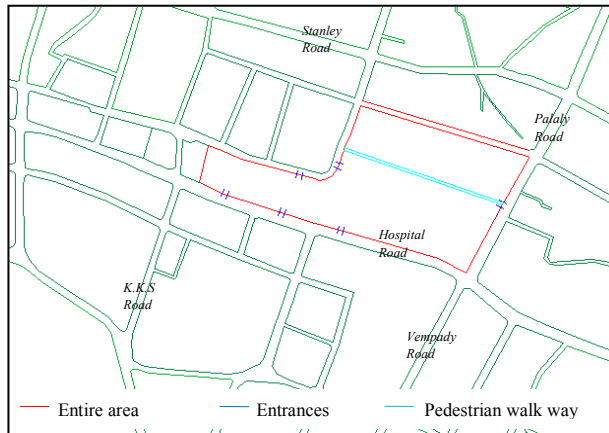
Source: Field Study, 2015

Recommendations

· Minimum land size for subdivision has to be defined by the Jaffna Municipal Council and the Urban Development Authority.

· The rules, regulations and policies on land use must be formulated by the Jaffna Municipal Council and the Urban Development Authority to control arbitrary development that has been highly occurring within the site without honoring the sensitiveness of the natural environment.

· Land and property values have to be controlled by authorities in order to make space available and possible for any level of investor.

· Taxation policy has to be revised by paying attention on type, level and scope of investment. A common taxation is not appropriate for a diverse investment on space.

· The Jaffna town development should be directed to the east direction than the north and the west.

· The Jaffna Hospital has to be expanded in the north direction rather than east direction.

- If only possible in future, the Mahatma Ghandi road and Clock Tower road, which are separated by the hospital, should be linked again to increase high level of connectivity by using advanced engineering technology (Over head bridge) without affecting the function of the hospital.

- Construction over the channels must be avoided in future. In order to make sure of effective function of channels it should be modified as the location where the construction is already made. It does not mean to maintain all channels open. It should have accessibility to clean and monitor.

- Linking roads have to be constructed in order to reduce underutilization of land due to inaccessibility.

- Improve the visibility of ponds and channels to reduce the pollution. The spaces for pedestrian movement could be created along these ponds and channels to reduce the pollution.

- Charges for light and heavy vehicles on streets should be increased in double to encourage them to properly utilize the parking space. At the same time, reasonable fee has to be collected from motorbike parkers. Fees collectors should be employed in Hospital road, K.K.S road, Stanly road, Power house road, C. Ponnambalam road, Kasthuriyar road and Old post office road.

- Uploading and unloading activities should be allowed doing in the newly created back side roads rather than hospital road in order to regulate the traffic flow. Otherwise, these activities have to be permitted to do at night. The Jaffna Municipal Council has to be engaged in it.

- Temporary and mobile businesses within the site must be prohibited in order to support and protect registered businesses and investments. The Jaffna Municipal Council has to monitor this.

- People participation should be increased in flood management. The Jaffna Municipal Council has to organize awareness programmes about flood management. It will empower and mobilize the people to act on it.

- People participation should be increased in waste management. The Jaffna Municipal Council has to organize awareness programmes about solid and liquid waste management. Especially about separation and disposal of degradable solid and liquid waste at domestic level. It will empower and mobilize the people to act on it. Increasing the charge for waste collection will motivate the people to participate in this process.

- The Jaffna Municipal Council must pay individual attention on the waste produced in the hospital. Sewerage and medical waste that are produced by hospital is hazardous. It will quickly affect the people due to the high density of them within the site as a town. It affects the natural environment too.

Conclusion

The Jaffna General Hospital and the Bus Stand are the core elements that have been determining the successful function of this site since 1940s. The total function of site will decline if these two elements are moved. These are the two elements that cause major issues within the site too. Therefore, the improvement of the hospital should be carried out on the north direction and the bus stand has to be transformed as a well structured terminal.

In addition to that, there are lack of rules, regulations and policies regarding land subdivision, land value, land use and natural resource management. Therefore, Jaffna Municipal Council and Urban Development Authorities have to pay high attention on formulating and implementing by laws and controlling and managing the spatial and functional development properly in the site.

Further, flooding, waste management and natural resource integration issues could be solved by people participation. The Jaffna Municipal Council is a responsible institution to empower and mobilize the communities and societies for the successful function of the site.

There were no much centralized planned development occurred since the Jaffna town center site evolved from colonization period. Most of the developments are happening arbitrarily due to the private ownership. Three decades of war is also a major factor for delaying in formulating rules, regulations and policies relevant to spatial and functional development. This is the time for an action that should be taken by responsible authorities like the Jaffna Municipal Council and the Urban Development Authority to design, control and manage the site improvement properly. Here, the eight plans that are proposed through a comprehensive research will be implementable to improve the Jaffna town site to be a Green Field City of Northern Sri Lanka.

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THE EFFECT OF TASKS IN ENHANCING THE SPEAKING AND WRITING SKILLS OF THE ESL TERTIARY LEARNERS

Vijaya Bhaskar Chandran

Thirunavukkarasu Karunakaran

Abstract

This paper deals with Task- Based Approach (TBA) and its impact on the speaking and writing skills of English as the second language (ESL) engineering learners. The approach involves engaging learners in an informal discussion on a problem based topic and incorporating the outcomes of the discussion in writing a paragraph on the same topic. To validate this approach, the paper reports a study in which 50 first year learners from various engineering courses such as civil, mechanical, electrical, electronics and manufacturing were randomly classified into two groups: Experimental group using the Task Based Approach and a control group using the Conventional Approach [an approach, where teacher is the centre of focus rather than the learners (Zohrabi, et. al. 2012)]. Results revealed that there was a significant difference in the performance of the group that experienced the change compared to the control group in terms of speaking and writing tasks. The overall output after the interview with the experimental learners revealed that learners in the group where changes took place were confident enough to speak and write more fluently. This suggests that this task changed the approach of the learners thereby generating interest towards speaking and writing tasks.

Key words: informal discussion; paragraph writing; speaking skills; writing skills; tasks.

Introduction

On observing the experience of English as second language (ESL) teachers using TBA, it could be inferred that learners perform tasks with great interest and enthusiasm. The reason is that learners are free to use their own language rather than the language decided by their teachers (Willis, 1996). Especially, when the task revolves around a problem to solve, demanding the application of both speaking and writing skills, learners encounter the task with great confidence and execute it happily. According to Nordin, N. A et al. (2012) the learners used their writing and speaking skills to complete the task with their group members to create a script and had fun while interacting with others in the midst of completing the tasks assigned to them. To make it possible, an appropriate classroom set up is mandatory with proper guidance from the facilitators.The appropriate classroom setup includes seating arrangements with learners facing each other for group or pair work, placement

of learners to ensure that they sit in an ideal place to avoid distractions, display of posters in the classroom prepared by the learners, inclusion of audio and video to motivate learners to take part in the task.

   The Task Based Approach (TBA) provides a flexible framework for language instructors to create a classroom that facilitates second language acquisition (Nassaji & Fotos, 2011). TBA is popular as a language teaching approach (East 2020) and furthermore from the previous experience of the researcher, learners' attitude reveals that these tasks could take place effectively in a student–friendly atmosphere which is considered to be the required classroom set up for this study (Bhaskar& Soundiraraj S, 2013). Also, learners learn L1 (Chinese language) through TBA which has proved to be an excellent approach because it combines the classroom instruction with the real world situations (Liu Li, 2014). Given the viability of TBA and its influence on enhancing learners' communication skills and the evidence of development in the learning process, TBA is a good option to apply in the classroom for ESL/English as Foreign Language (EFL) teaching and learning. TBA as in recent approaches like communicative language teaching, cooperative language learning, philosophy-based language teaching, and so on, learners use language to complete the task and come out with a certain language output. In addition, TBA is in accordance with Vygotsky's (1978) view that learning is a social and constructivist activity, and language is a tool for thinking. According to Vygotsky (1978), social interaction is one of the major features of developing language capacity. He states that thought and language are initially separate elements, but they become interdependent during acts of communication as meaning is created through interaction. From this point of view, TBA allows the learners to use the language to interpret, think and share their ideas with their counterparts. In this study, the task is divided into two phases – speaking and writing. The crux of the first and second phase is informal discussion and paragraph writing respectively, based on a problem oriented topic. Hence, informal group discussion is an appropriate social activity providing enough space for the learners to think, interpret and share their points with each other, thereby settling down at a solution. Also, the ideas generated from the informal discussion serve as a tool in the writing phase.

Literature review

Task-Based Language Teaching (TBLT) has attracted the attention of second language acquisition (SLA) researchers, curriculum developers, educationalists, teacher trainers and language teachers worldwide (Branden 2006). TBA has become one of the prime approaches in developing the language skills of ESL/EFL learners. Also, a number of studies have proved that it is an essential part of any means of any language teaching method(Careless 2003; Ellis, 2000; 2003; Nunan 2004; Rahimpour 2008; Robinson 2003; Willis 1996). Besides, there is a broad and rapidly expanding literature on task-based language teaching, with many studies focused on post-compulsory schooling age groups, often in ESL contexts (Carless, 2007). This is an indication that task based approach had contributed to ESL context

in developing the language skills both at school and college level, and also it has a lot to contribute in the future. According to Cubillo (2009), Task-Based language learning is a handy approach where meaning is primary and learners while executing a communicative task focus on meaning rather than form. It helps them to build their language learning process at ease and gives them the confidence to use the language at more instances. TBLT as an optimal approach to language teaching and learning provides rationale and methodological principles for the application of mobile technologies (Xue, 2020). Also, Chua and Lin (2020) imply that TBLT can increase learners' learning motivation in long term application

For the past two decades numerous definitions have been conceived for the term 'task'. For example, according to Long (1985), a small 'task' is a part of a bigger work where a person embarks upon either for an incentive or at free of cost. There are a range of tasks that comprise all the real life activities we human beings indulge in. Some of them are booking a ticket, taking an appointment with a doctor, undergoing a driving test, writing a letter, segregating one thing from other things, locating and visiting a friend and helping a person to do his work. On the whole, a 'task' is a part and parcel of our life, where one executes it in his daily life in a number of ways for a number of reasons.

The definition of task adopted for this study follows both Nunan (1989) and Willis (1990). According to Nunan, a 'task' is a classroom work which engages learners to communicate in the given target language with a primary focus on meaning. It has a connection to the real world, and it should be complete enough to ensure that learners perform the task without any doubt. Willis states that a 'task' is something which learners perform in a classroom using the language with an ultimate purpose of achieving an outcome.

Seedhouse (1999) points out that based on the previous researches, the theoretical and pedagogical evidences prove that there is a substantial support for task-based learning. Hismanoglu & Hismanoglu (2011) states that task-based learning helps the learners to produce the language through meaningful tasks in a natural way rather than putting learners to intentional practice of language ítems in the form of exercises.

Willis (1990), for the most part considers learner's creativity as the lively factor in the learning process. Task-based learning is used to utilize that creative aspect rather than suppress it, and it makes the learning process more resourceful.

Some of the reasons for TBA to establish a stronger place in the ELT research may be due to the following characteristic features mentioned by (Ellis, 2003). This study has made an attempt to incorporate the task for similar qualities.

1. It involves natural usage of the language

2. It is a learner-centered approach rather than teacher-centered one

3. It involves both focus on form and focus on meaning

4. It has a goal and output

Aim of the study

The purpose of this study is to investigate the results of a technique designed to enhance the speaking and writing skills of L2 learners studying in engineering colleges. As engineering learners complete their studies, they are employed in the private sector which involves communication in both speaking and writing. However, there is a tendency for engineering students to prefer either speaking or writing, ignoring the other skill. This study examines a technique to guide them into developing both skills.

Hence, an important skill in teaching is the ability to make learners the focus of our teaching (Richards &Bohlke, 2011). It includes taking the learners' needs and goals into consideration from learning point of view, instilling the seeds of trust and confidence in them while teaching English, addressing learners' varied needs and learning styles, scaffolding and providing feedback after their language learning process to strengthen their confidence level and applying strategies to create a congenial atmosphere for learning. (Dornyei 2001). The main purpose of the study lies upon the previously mentioned ideas. Based on the learners' needs a set of tasks were designed to cater to their production needs, and also it is to find an answer to the general question 'Does TBA help learners in developing the speaking and writing skills of L2 tertiary learners?' and also the following specific research questions: To what extent does informal group discussion help the learners to develop their speaking and writing skills in the experimental group? Also, if there were any significant difference between the experimental and control group in terms of speaking and writing skills?

An overview of an experimental research

Experimental research plays a vital role in assessing the influence of one variable over the other. Experimental method is the most scientific and sophisticated research method. It is called as "observation under controlled conditions". It mostly deals with the determination of the effect of independent variables on the dependent variables. For instance, in this study, the use of TBLT, a student-centered approach is an independent variable while the outcome of the students' performance in terms of speaking and writing is a dependent variable. Overall, this experimental research helps to attain the objective of this study in a comprehensive manner. The following section explains the implementation of TBLT in the classroom and its outcome.

Procedures for running the TBA classroom

This is a study based on experimental research, where the task component designed was an outcome of the teacher's previous experience with the students in the class.

Participants and materials

At first, learners are divided into groups with each group consisting of five members. Next, the TBA classroom session begins with the facilitator giving a problem based topic to the learners. After receiving the topic, the learners start the informal group discussion under the supervision of the facilitator. At the time of discussion, learners are free to discuss the topic using their flow of thoughts and ideas. Also, they are instructed to take hints in the due course of the discussion so that they can incorporate them into the writing phase. During the discussion, the facilitator also takes personal notes to give additional inputs to the learners regarding the topic. At the end of the discussion, the learners are instructed to write a paragraph based on the problem oriented topic. These paragraphs are verified by the facilitator after the class for each session and returned to the learners with feedback before the next class hour. Each class session lasts for one hour with the following tentative time allocation: informal discussion - 30 minutes, paragraph writing – 30 minutes.

The study was conducted in a Technical University located in Chennai, India. Fifty first year engineering students took part in the study. Twenty-five learners agreed to be a part of the trial group and the remaining 25 learners were part of the control group. As the learners were in the first semester of their course, they had group discussion and paragraph writing as a part of their syllabus which focused on speaking and writing skills. The former was used to assess their speaking and the latter was used to assess their writing skills. These two assessments, while conducted in the classrooms, received poor response from the learners. It is, therefore, important that we understand contradictory intentions and interpretations of classroom participants if we are serious about facilitating desired learning outcomes in the classroom (Kumaravadivelu 1999). As a result, the researcher posited two reasons for the poor response. Firstly, most of the learners were hesitant to take part in the group discussion, as it was a new concept for them, and they were not used to speaking in groups. The second reason was the fact that in the previous writing sessions, most of the learners produced little content in their writing sessions. As a result, it was an indication that learners were in need of increased content to write a paragraph and also to improve their writing skills. To address these problems using classroom based research, tasks were designed to suit the mindset of the learners.

Data collection procedures

The task was centered on a problem based topic and, the task cycle was divided into three stages: pre-task, while-task and post-task as given in Table 1 (Skehan, 2003).
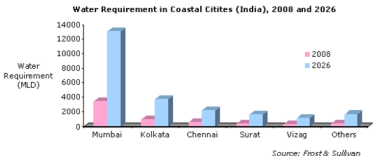
Table 1
Integrated Task Based Approach

Objective: To discuss and write a paragraph for about 150 words on the following problem solving topic: ❖ Lack of adequate water supply in Chennai city.
Overview: The task involves exchange of ideas (speaking) within a group of learners on a given topic followed by writing.
Title: Lack of adequate water supply in Chennai city.
Pre-Task
➢ Pictures are shown to the learners depicting water problem in Chennai.
➢ Outline for discussion: The water problem in the city, reasons for the problem, effective solutions.
➢ Learners are provided with the structure of the problem solving essay.
➢ Simultaneously the teacher gives adequate input on how to write essay.
➢ A sample write up on problem solving essay is also provided.
While-Task
Speaking
Learners, after looking at the pictures given to them and getting a fair amount of input from the teacher, discuss with each other about the problem they have been given.
Both the learners jot hints at the time of discussion.
Writing
After the successful completion of the speaking part, both the learners write an essay on the given topic with the help of the ideas generated from the speaking part.
Post-Task
Focus on: logical development of ideas, vocabulary and sentence structure.

Pictures used in the study

1

2

3

4

The experimental group underwent the three task stages to execute the given task. As mentioned above, the first phase of the task was to discuss the topic in an informal discussion and the second phase was to write a paragraph based on the points generated out of the discussion. In each session, the experimental group was given different topics to discuss and take notes on during the discussion and after the first phase, they were asked to sit individually and write a paragraph based on the topic.

On the other hand, the control group was given the same topics and was asked to visit the library to collect data about the topic and write the paragraph in the writing phase.

The classes took place four days a week (two days for the trial group and two days for control group); 16 sessions were conducted with 8 sessions each for both trial and control group. Both the classes were taught by the same teacher as there was no other teacher available because of scheduling problems. The participants in each group received pre- and post-tests in both speaking and writing. The speaking performances of the participants in both the groups in pre- and post-test were audio recorded with their consent for subsequent rating. Their pre- and post-writing paragraphs were also collected. The parameters for assessing the speaking and writing skills were adopted from the 'speaking and writing scale: analytic descriptors of spoken and written language' from the Common European Framework (Council of Europe, 2001).

Table 1

Group	Test (Writing)	N	Mean	SD	p	df	t
Experimental group	Pre-test	25	13.48	1.33	0.3780	48	0.8898
	Post-test	25	17.56	0.14			
Control group	Pre-test	25	13.16	1.21			
	Post-test	25	14.76	1.09			

The two-tailed P value for the Pre-test in writing is 0.3780 while for the post-test is 0.0001.

Table 2

Group	Test (Speaking)	N	Mean	SD	p	df	t
Experimental group	Pre-test	25	13.04	1.24	0.4824	48	0.7079
	Post-test	25	17.56	0.77			
Control group	Pre-test	25	12.80	1.15			
	Post-test	25	14.80	1.00			

The two-tailed P- value for the Pre-test in speaking is 0.4824 while for the post-test is 0.0001.

Results and discussion

The comparison of speaking and writing performances of the participants in both the groups was made using the pre- and post-test scores. Tables 1and 2 present the results for speaking and writing of learners in both groups.

As is seen in Tables 1 and 2, the results indicate that over time, the performance of learners in the experimental group was significantly better. The unpaired t-test (two-tailed) for the pre-test in terms of speaking and reading skills shows that there was no significant difference between the performance of the learners in both the control and experimental group. It was found that difference between the groups for writing $p = 0.3780$, t=0.8898, df =48 and speaking p= 0.4824, t = 0.7079, df = 48 was not statistically significant.

Unlike, the unpaired t-test (two-tailed) for the post-test in terms of speaking and reading skills shows that there was a significant difference between the performance of the learners in both the control and experimental group. It was found that the difference between the groups for writing   p = 0.0001, t=10.7481, df =48 and speaking p = 0.0001, t = 10.9441, df = 48 was statistically significant.

The pre-test and post-test results indicate that learners in the experimental group gained in writing in terms of grammar, vocabulary, content, coherence and sentence structure. Likewise, in speaking, learners gained in content, grammar, vocabulary, fluency, coherence, and body language. Also, these were considered as the parameters to assess the learners' performance in both speaking and writing skills respectively. The difference in outcome between the two groups could be due to the implementation of TBA. The influence of TBA can't be proven as a cause for all the differences since other variables that influence the results. The variables are the time factor, prior knowledge about the subject, classroom atmosphere, the team which they were placed to perform the task, the teacher's role in imparting the task.

Based on the teacher's observations, it seemed that learners belonging to the trial group were more inspired to take part in the discussions. The learners were deeply involved in the discussion (e.g., water scarcity in Chennai City) and tried to suggest an appropriate solution. They prolonged the discussion beyond the given time and even continued outside the class.

After the sessions, the learners in the trial group met the facilitator and discussed the points and ideas raised about the topics in the earlier class. Whereas, the control group sent a small mail regarding the points that came out during the discussion in the earlier session, although it might have been more valuable to have also interviewed them. When the learners in the trial group were asked about their experience in performing the task and the motivational factors that helped them to execute the task, they pointed to the distinctive features of the task. In particular, they emphasized the following points:

1. The tasks were thought-provoking, creating scope for discussion, enabling them to use appropriate and precise language to elaborate on their ideas.

2. The tasks helped them to develop as good team members and generate a sort of responsibility to find out the appropriate solution through discussion.

3. In the post-test, learners were focused on incorporating appropriate ideas in the paragraph when compared to the pre-test which was vaguely written.

4. They were so engaged in the task that they never felt that were using English when completing the task.

Based on the analysis of the pre- and post- test results and the interviews of the experimental group it can be inferred that they were motivated to perform the task. They took part in the informal group discussion and also able to easily write the paragraph on the given topic. Whereas, the control group was quiet most of the time unless they were personally asked to contribute their ideas for the development of the discussion. This might be because the experimental group had gotten more practice by taking part in the discussion and paragraph writing.

Some input for teachers

ESL teachers can use TBA in their classrooms for a better outcome from learners in terms of speaking and writing skills. They can give topics for discussion and writing from daily life rather than topics that students cannot relate to, given that a task-based speaking class is not similar to that of a more traditional class, but has a unique output. In this approach, the tasks are chosen in such a way that learners don't face any problems comprehending them. Therefore, even a task like the one in Appendix A can be used with the learners for discussion. In addition to this topic, a range of topics can be included for the task dealing with films, lifestyle, politics, educational models, society and so on. As Seedhouse (1999) states "tasks should be particularly good at training learners to use the L2 for practical purposes, and this will prepare them well for accomplishing some tasks in the world outside the classroom"(p.155).

The role of a teacher in TBA is that of a facilitator and moderator. The teacher helps the learners in case of any clarification or doubts before discussion and writing. For example, the teacher can go around the classroom to check if all the learners are comfortable performing the tasks. The teacher can also help the learners in discussions on by pre-teaching how to initiate a discussion, how to agree or disagree with an opinion, how to conclude the discussion and so on. Whenever required the teacher can provide appropriate examples for the learners to make sure that the task is developing as expected. It is through this sort of modeling the learners can be trained to take part in discussion and writing without any fear or uncertainty. One advantage of this approach is the adaptability it has. It can be incorporated into the teaching-learning process at any point in time to develop any sort of skill. The teacher can develop appropriate tasks based on the learners' interests and implement them in the class which can lead to an improvement in the learners' language skills.

Conclusion

In accordance, with changing trends this small study was initiated to investigate whether a task if designed appropriately, could combine both speaking and writing skills and to examine if such a task could encourage learners to use the target language without any hesitation and fear. Thus, the study has attempted to present TBA as one of the approaches to ESL/EFL teaching and learning. In this experimental study, TBA is also focused on two objectives: first, it helps in fostering the production of language skills in terms of speaking and writing. Second, it enhances learners' logical reasoning through discussion so that they can decide on their own rather than blindly accepting a point of view. The findings of the study support that speaking and writing skills of L2 learners can be improved by designing tasks suitable to learners and also by providing a suitable classroom set up. The study suggests that a teaching-learning process can progress only when both the stakeholders function together in the development of the language Some of the limitations associated with the study are concerned with time constraints and scheduling problems. Owing to a little time availability, the study was conducted only for 16 sessions, the possibility of providing extra time for the learners to prepare for the task was also very little. Besides, the control group learners were not provided with an instructor during the study due to the tight schedule. The study is restricted to first-year engineering students, whereas there was an ample possibility to extend the study to third-year students. If the research had been conducted for a semester, the results would have been even more effective providing scope for larger findings. At present, the further scope lies in conducting a comparative study in terms of analyzing the first year and third-year students' speaking and writing skills through TBA by applying a similar kind of tasks.

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MAPPING AND ANALYSIS OF LAND COVER/ LAND USE CHANGE IN VAVUNIYA DS DIVISION OF VAVUNIYA DISTRICT, SRI LANKA

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Abstract

The land use and land cover features in Vavuniya Ds Division of Vavuniya District are rapidly changed due to anthropogenic activities. The main objectives of this study are to map out the land cover distribution and to estimate the land use/land covers changes and their transformation of land use features using Landsat TM images for the period of 1997 to 2017. The land use and land cover are classified as forest, cropland & human habitation, fallow land, built-up area, water, and bare land. It shows that the larger areas are converted into other land use in the period of 20 years. The change detection matrix depicts that the total area of 630.72km² in different land cover features periodically transformed from one type of land use to another one or more types of land use. Population pressure, demand for urban-land and, agricultural expansion were the major driving forces behind the land use/cover change in the Vavuniya DS division. The expansion of the built-up area is directly linked to population growth which indirectly creates severe threats to the forest resources. The land use and land cover statistics from supervised classification showed that cropland & human habitation, water and bare land declined from 234.56km² (37%) to 157.16 km² (25%), 18.66 km² (3%) to 7.55 km² (1%) and 12.14 km² (2%) to 6.97 km² (1%) respectively. Whereas, fallow land, forest and built-up area increased from 93.64 km² (15%) to 122.81 km² (19%), 247.10 km² (39%) to 294.91 km² (47%) and 26.30 km² (4%) to 41.69 km² (7%) respectively. The Land cover change detection process produced relatively accurate information with overall accuracies of 93.33% and 90.83% and Kappa coefficients of 0.9200 and 0.0.8900 in 1997 and 2017 respectively. Therefore, it was assumed to have performed adequately for the purpose of detecting changes in land cover extent in Vavuniya DS Division of Vavuniya District, Sri Lanka. 120 samples were selected for ground truth verification of classified land cover and land use features. Overlay of the classified map of 1997 and 2017 shows land use/ land cover changed from 1997 to 2017 remarkably.

Key words: Land use, human habitation, land cover anthoropognic activities.

Introduction

In recent times, monitoring the changing pattern of land use and land cover has been improved using remote sensing data. The extent and patter of changes in land cover and land use over a period of time can be measured more accurately with the help of remote sensing data (Cornforth, Fatoyinbo, Freemantle, & Pettorelli, 2013). Satellite data have become an important source of land use change detection due to its repetitive coverage at short intervals (Luque, 2000). Today, anthropogenic activities directly alter the land use and land covers (35). General information about land use change is necessary for updating land covers map. The change detection is the process of identifying differences in the state of an object or phenomenon by observing it at different times (multi-temporal variations) (Singh, 1989). Change detection can be done precisely as GIS technology has a high volume of special data handling capacity. In addition, GIS technology helps us to do the overlay process with multilayers. Hence the main objectives of this study are to map out the land cover distribution and to estimate the land use changes and their transformation of land use features using Landsat TM images for the period of 1997 to 2017.

Literature review

The primary reasons for degradation of forest cover are population pressure, the practice of agricultural methods, and lack of awareness about the land use and forest cover. Changes in Land use/Land cover are defined broadly to include the conversion of forested lands into croplands and pastures, the abandonment of agricultural lands, deforestation, reforestation, afforestation, and urban sprawl (Drummond & Loveland, 2010). Assessment of the land use/land cover in any terrain should be taken into account the following essential factors such as the rate of depletion, the reason for the deterioration and remedial measures to restore. Assessment of land use and land cover change is not an easy task. It takes time to perform the assessment. It can be made easier only through Geographical information system and Remote Sensing techniques. Change detection and monitoring activities can be performed effectively by utilizing remote sensing technology (Yismaw, 2014). The major four aspects of change detection are detecting the changes, identifying the nature of change, measuring the aerial extent of change and assessing the spatial pattern of change. Those aspects will be considered in remote sensing as well (Mcleod & Conglton, 1998).

Land use/land cover monitoring using conventional method is labor intensive, insufficient, time-consuming and done infrequently. More recently, remote sensing data become the foremost data source for change detection studies because of its temporal resolution, synoptic view, and digital format. Working with satellite data produced more accurate assessment than doing in the traditional method (Fonji & Taff, 2014). Digital data obtained from satellite permits advanced computer analysis, classification and compatible with GIS (Treitz, Howarth, & Gong, 1992). In response to increasing rate of land use and land cover change, most developing countries

apply remote sensing data for change detection and monitoring at the national and regional level.

High-resolution imageries (Quick Bird, IRS etc.) should be used to detect land use change and produce a map with high accuracy. However, high-resolution imageries are costly. Hence, lower cost imageries (Landsat TM, ETM+, etc.) have been used to monitor land use/land cover change with the acceptable level of accuracy.

Over the past couple of decades, many types of research applied to satellite images to detect land use and land cover change. For instance, (Unni, Roy, & Parthtasarathy, 1985), (Luque, 2000), (Imbernon & Branthomme, 2001), (Young & Wang, 2001), (Karia, Porwal, Roy, & Sandhya, 2001), (Boyd, Foody, & Ripple, 2002), (Larsson, 2002), (Roy & Joshi, 2010), (Reis & Yomralioglu, 2006), (Panigrahy, Kale, Dutta, Mishra, & Banerjee, 2010), (Sakthivel et al., 2010), (Forkuo & Frimpong, 2012), (Yismaw, Gedif, Addisu, & Zewudu, 2014), (Kayet & Pathak, 2015), (Sajjad et al., 2015), (Sadeghi, Malekian, & Khodakarami, 2017), (Mihai, Săvulescu, Rujoiu-Mare, & Nistor, 2017). The basic principle of change detection through remote sensing is that the changes in spectral signatures commensurate with the change in land use and land cover. The temporal impacts can be measured through the process of change detection (O'Callaghan, 2012). Change detection can be done precisely as GIS technology has a high volume of special data handling capacity. In addition, GIS technology helps us to do the overlay process with multilayers.

Study area

The study was conducted in the Vavuniya DS Division, Vavuniya District, Sri Lanka. Geographically study area lies within 80 40' 00" to 90 00' 00" Latitude and 800 15; 00" To 800 40' 00" Longitude (figure 1). The altitude of the study area is 104 meter above sea level. The total population of the area is117153 persons and the population density is about 199/km2 (Department of Census and Statistics, 2012). The area consists of different types of land use and land cover. The study area was selected as a representative site of the entire Vavuniya District. The selection of this study area is strongly related to the variety of natural environment and land use and land cover types.
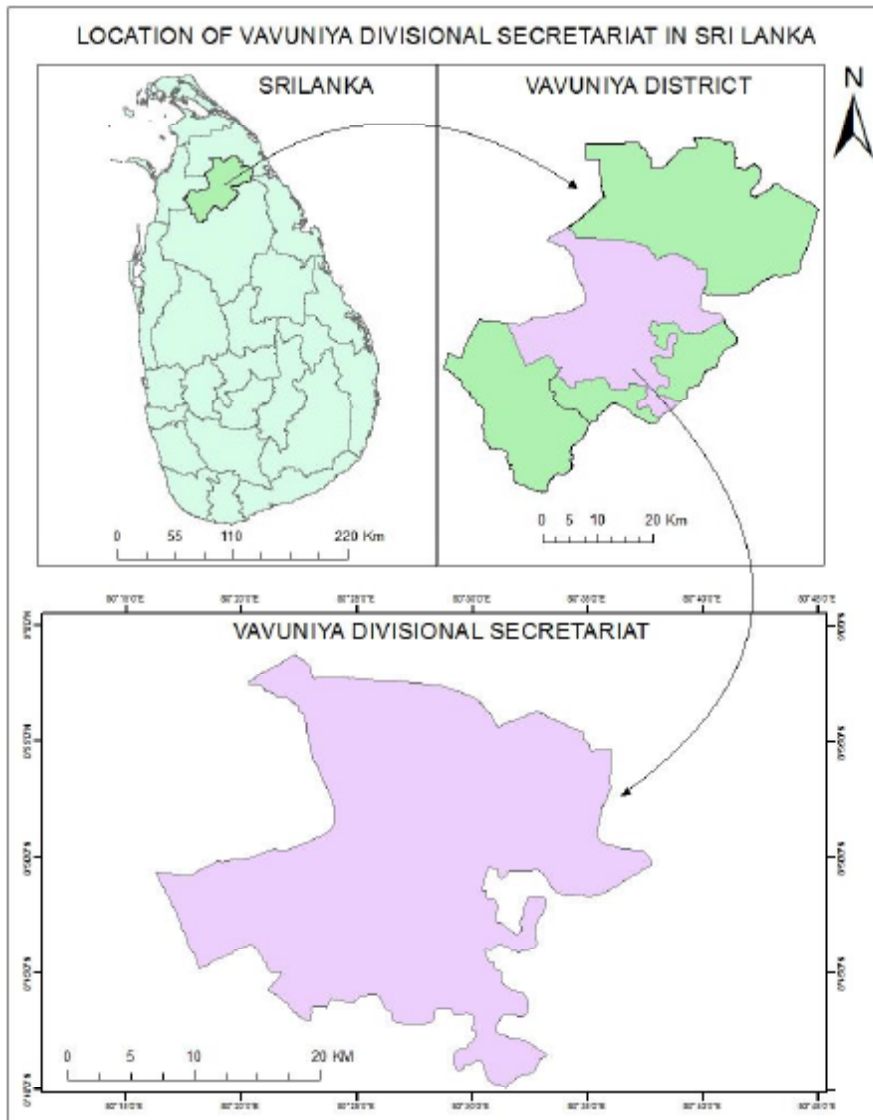
Figure 1: Map of the Study Area

Methodology

For change detection over a period of time, it is essential to have temporal satellite imageries of the same time period and same season. Landsat 5 and Landsat 8 Satellite images of two time periods acquisition date of 5th December 1997 with 7 bands and 17th December 2017 with 11 bands with the general resolution of 30 m were downloaded from United States of Geological Survey website. In addition, 1:50000 topographic maps were used for accuracy assessment of the images and geometric correction. A field survey was conducted for selecting control points. ERDAS

Imagine 15 and ArcGIS 10.3.1 were used for image processing and land cover change detection. Image processing techniques were applied to make the images for a visual explanation of land covers. These included geometric correction, radiometric correction, resampling images and clipping of the images. Both unsupervised and supervised image classification techniques were applied. An unsupervised classification was done before fieldwork. For the supervised image classification training areas were established based on the ground truth taken during fieldwork. Among different algorithms, in the supervised classification, maximum likelihood classification was utilized. Socio-economic surveys (with 50 questionnaires) and field observation were also used to determine the cause these land use/cover dynamics.

After the image classification, land use and land cover change were detected by identifying land cover types by using ERDAS Images 15 and ArcGIS 10.3.1. With the help of visual interpretation of satellite images, four types of land covers are identified such as vegetation cover, settlement and Agricultural area, bare land and water body. Descriptions of each land cover are as follows.

Table 1: Details of Land use/Land cover classification

Land use/Land cover types	Details
Forest	It represents natural and fragmented forest cover areas including small trees, bushes, shrubs, small size plant species with fewer crowns.
Cropland & Human habitation	The land that is covered with agricultural activities with scattered human settlements
Bare Land	The area with bare ground and degraded grassland
Waterbody	The Land completely occupied with water
Fallow land	The land used for farming but that is left with no crops for a season
Built-up area	The area covered by houses or other buildings

Multi-temporal data sets have been used to differentiate areas of land cover change between the dates of selected satellite images. The change detection technique that we used must be able to identify where and how much change has occurred. Further, the change detection matrix has been prepared to observe the trends and patterns of land cover change within the particular period. Kappa statistic was prepared for the different areas that were classified.

Table 2: Geospatial data used for change detection analysis of land use and land cover in Vavuniya Divisional Secretariat (in 1997 and 2017)

Datasets	Landsat scene ID	Scale/ Resolution (m)	Year	Data Source
Landsat 5 TM	LT51410541997022BKT01	30 m	1997	US Geological Survey, Earth Explorer
Landsat 8 TM	LC81410542017109LGN00	30 m	2017	US Geological Survey, Earth Explorer
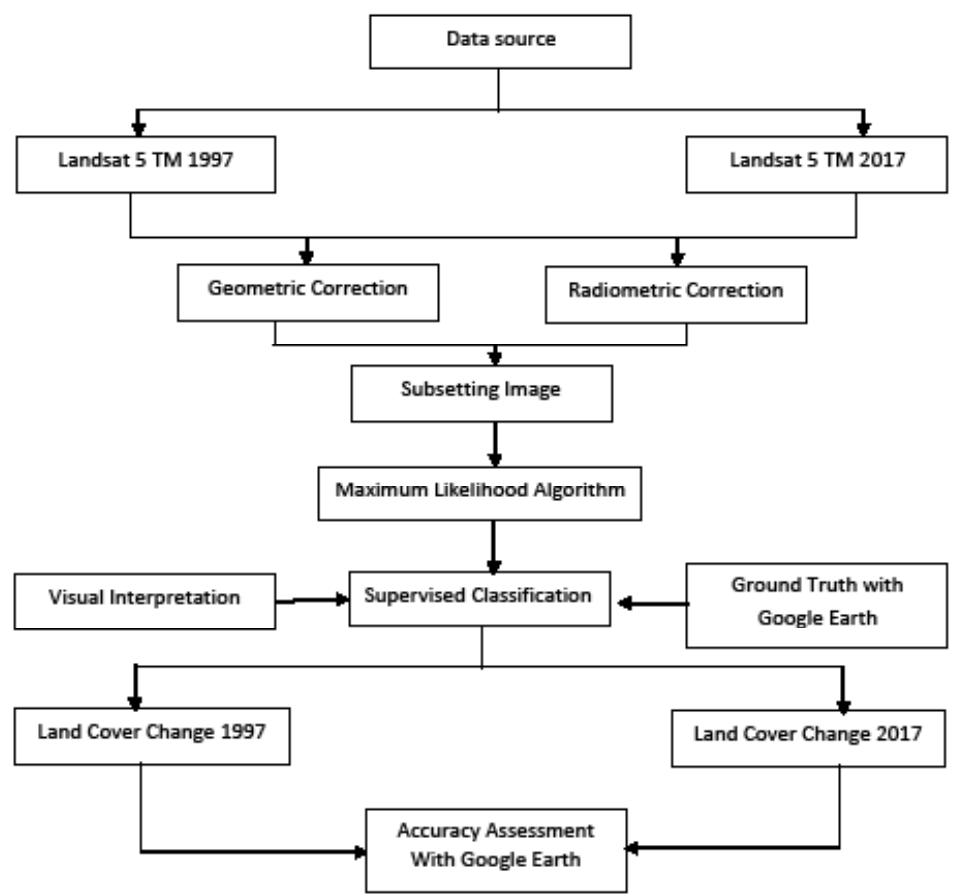
Figure 2: Flowchart of a methodology for land use/ land covers change

Results and discussion

The land use/ land cover map of Vavuniya DS Division of years 1997 and 2017 is presented in figure 3. The overall classification accuracy for the year 1997 and 2017 were 93.33% and 90.83% and overall kappa statistics were 0.9200 and 0.8900 respectively (Tables 3, 4, 5, and 6). The land use/ land cover classification results for 1997 and 2017 are summarized in Table 7 which shows percentage of classes of the land cover/land use practices observed in Vavuniya DS Division during 1997 and 2017.

Table 3: Accuracy Totals for Land use/land cover classification 1997

Accuracy Totals for Land use/land cover classification 1997					
Class Name	Reference total	Classified Total	Number correct	Producer accuracy	User accuracy
BARE LAND	19	20	18	94.74%	90.00%
WATER	20	20	20	100.00%	100.00%
FALLOW LAND	23	20	19	82.61%	95.00%
CROP LAND & HUMAN HABITATION	20	20	18	90.00%	90.00%
FOREST	20	20	19	95.00%	95.00%
BUILT-UP AREA	18	20	18	100.00%	90.00%
Overall Classification accuracy = 93.33%					

Table 4: Accuracy Totals for Land use/land cover classification 2017

Accuracy Totals for Land use/land cover classification 2017					
Class Name	Reference total	Classified Total	Number correct	Producer accuracy	User accuracy
BARE LAND	19	20	17	94.44%	85.00%
WATER	20	20	20	100.00%	100.00%
FALLOW LAND	23	20	17	89.47%	85.00%
CROP LAND & HUMAN HABITATION	20	20	18	78.26%	90.00%
FOREST	20	20	19	95.00%	95.00%
BUILT-UP AREA	18	20	18	90.00%	90.00%
Overall Classification accuracy = 90.83%					

Table 5: Kappa Statistics for 1997   **Table 6: Kappa Statistics for 2017**

Kappa Statistics for 1997		Kappa Statistics for 2017	
Overall kappa Statistics = 0.9200		Overall kappa Statistics = 0.8900	
Conditional Kappa for Each Category		Conditional Kappa for Each Category	
Class Name	Kappa	Class Name	Kappa
BARE LAND	0.8812	BARE LAND	0.8235
WATER	1.0000	WATER	1.0000
FALLOW LAND	0.9381	FALLOW LAND	0.8218
HUMAN HABITATION	0.8800	HUMAN HABITATION	0.8763
FOREST	0.9400	FOREST	0.9400
BUILTUP AREA	0.8824	BUILTUP AREA	0.8800

Change detection method was employed in order to detect land use changes between 1997 and 2017. The rate of land use and land cover change is presented in table 7. There has been marked land use/land cover change during the period of 20 years based on the comparison of each class of 1997 and 2017.
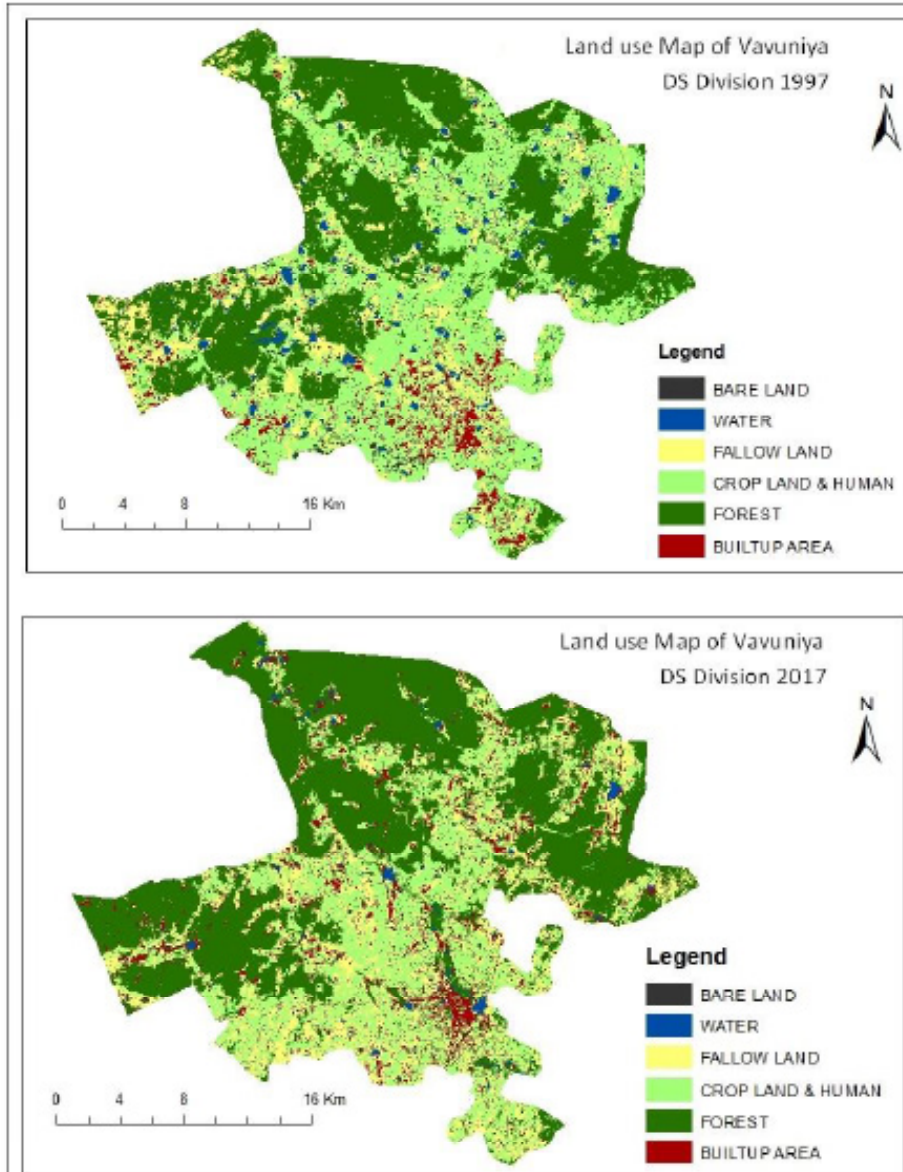
Figure 3: Land use/ Land cover classification of Vavuniya DS Division in 1997 and 2017

The land uses of the study area were classified into classes of the forest, crop and human habitation, fallow land, bare land, water, and built-up area. The statistics of land cover change were computed and summarized to the nature of changes based

on 1997 and 2017. The dominant land use and land cover in 1997 is a forest that takes 247.10km2 of the total area, cropland & human habitation covers 234.56km2, fallow land covers 93.64 km2, built-up area covers 26.30 km2, water body and bare land cover 18.65 km2, 12.14 km2 respectively. In 2017, forest land takes the highest share of land use and land cover which covers 294.91 km2, followed by cropland & human habitation which accounts 157.16 km2, fallow land 122.18 km2, built-up area 41.69 km2, water body 7.54 km2 and bare land 6.97 km2 which covers the minimum area of coverage (Figure 3 and Table 7).

Based on 1997 land use classes, about 39% was accounted for forest land whereas cropland and human habitation cover 37% and fallow land shared 15% and built-up area shared 4% and water and bare land shared 3% and 2% respectively of the total area of the Vavuniya DS division. In 2017, forest land, fallow land, and built-up area increased in area l coverage by 8%, 5%, 2% respectively. However, cropland & human habitation, water body and bare land which are likely to change into other forms of land use became reduced as compared to the 1997 and 2017 land use classes.

Table 7: Rate of Land use/Land cover change

Land use/Land Cover	1997	%	2017	%	Change	Change %
BARE LAND	12.14336	2%	6.970809	1%	5.172554	1%
WATER	18.65891	3%	7.549509	1%	11.1094	2%
FALLOW LAND	93.64995	15%	122.8133	19%	-29.1633	-5%
CROP LAND & HUMAN HABITATION	234.5624	37%	157.1623	25%	77.40006	12%
FOREST	247.1083	39%	294.9144	47%	-47.8061	-8%
BUILTUP AREA	26.30093	4%	41.69672	7%	-15.3958	-2%
	632.4238	100%	631.1071	100%		

Two Landsat satellite TM images of 1997 and 2017 were used to compute and monitor the areal extent and rate of land use/land cover change between 1997 and 2017. Digital image interpretation was performed for each year to compute total area of land use and its percentage for each land use types were calculated and summarized. Land use/land cover map of the total area of 1997 and 2017 is presented in table 7.
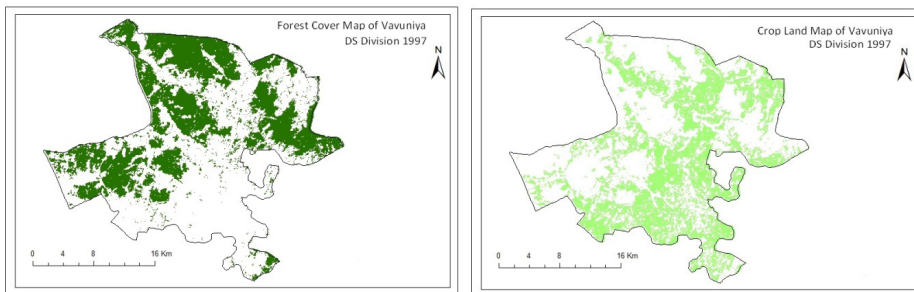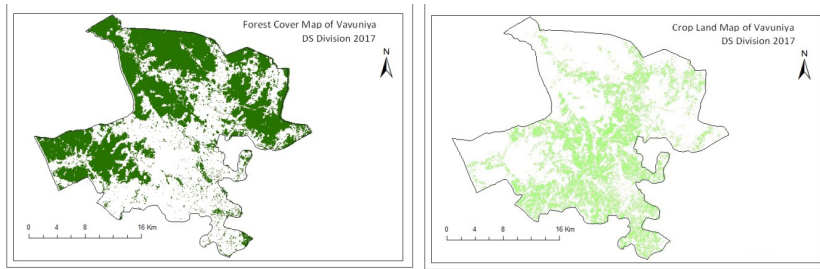
Figure 4: Land used for forest and Cropland & Human habitation in 1997 and 2017
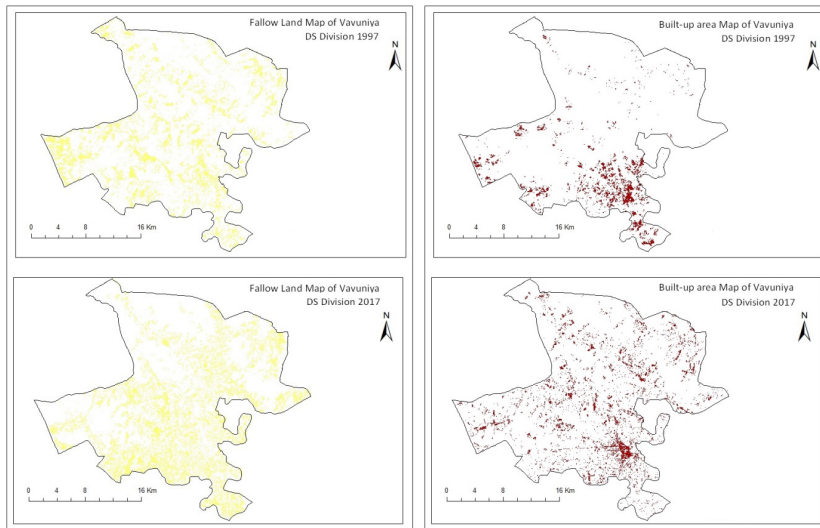
Figure 5: Land used for Fallow land and Built-up area in 1997 and 2017

Figure 6: Land used for Water and Bare land in 1997 and 2017

The land use and land cover statistics from supervised classification showed that cropland & human habitation, water and bare land declined from 234.56km2 (37%) to 157.16 km2 (25%), 18.66 km2 (3%) to 7.55 km2 (1%) and 12.14 km2 (2%) to 6.97 km2 (1%) respectively. Whereas, fallow land, forest and built-up area increased from 93.64 km2 (15%) to 122.81 km2 (19%), 247.10 km2 (39%) to 294.91 km2 (47%) and 26.30 km2 (4%) to 41.69 km2 (7%) respectively (Table 7).

Table 8: Matrix of Land use / Land cover change between 1997 and 2017

		Land use in 2017					
		BARE LAND	**BUILTUP AREA**	**CROP LAND & HUMAN HABITATION**	**FALLOW LAND**	**FOREST**	**WATER**	**Grand Total**
BARE LAND		0.275892	1.713262	4.207373	4.675936	1.14158	0.100069	12.114112
BUILTUP AREA		1.057838	3.678567	12.33167	8.039053	1.114875	0.035578	26.257584
CROP LAND & HUMAN HABITATION		3.136669	14.3471	101.802	63.9961	49.29327	1.304663	233.879752
FALLOW LAND		1.045898	14.90362	18.73977	26.84714	29.72194	2.181952	93.44032
FOREST		0.506109	3.926798	17.12237	13.86643	210.0794	0.876783	246.377924
WATER		0.946209	3.10732	2.879184	5.309606	3.357802	3.048525	18.648646
Grand Total		6.968615	41.67666	157.0823	122.7343	294.7089	7.54757	630.718338

(Note: left axis label reads "Land use in 1997")

Change matrix for 1997 and 2017 is analyzed to understand the major land cover change source. Change matrix has been produced based on satellite image classification and given in table 8. The matrix table explains the actual distribution of each land cover/ land use that has experienced transformation from one type to another or being lost areal extend or remained unchanged.

The amount of land use changed into other land use type obtained from other land use type. For example, 1.05km2 of built-up area, 3.13 km2 of cropland & human habitation, 1.04 km2 of fallow land, 0.5 km2 of forest land and 0.94 km2 of water body were converted to bare land. While the highlighted diagonal values stand for the unchanged land use/land cover that maintained its original land cover/land use unit (Table 8).

The type and amount of conversion in the land use/land cover from 1997 to 2017 showed that the land with area of 0.27km2, 3.67 km2, 101.80 km2, 26.84 km2, 210.07 km2, 3.04 km2 classified as bare land, built-up area, cropland & human habitation, fallow land, forest, and water body respectively remained unchanged (Table 8). However, the transformation of land occurs form one types of land use into other land use types.

Causes of land use/cover change

Population pressure, demand for urban-land and, agricultural expansion were the major driving forces behind the land use/cover change in Vavuniya DS division.

Change in population size, distribution and associated demographic characteristics are the most important factors affecting land use distribution and change in Vavuniya DS division. Accordingly, 71% of the respondents reported that population growth and increasing land scarcity in the urban area are the factor of the first order of importance of land use change. Fast population growth during the internal civil war in the northern part of Sri Lanka and the consequent high pressure on land are expected to have an adverse effect on the existing urban area. Substantial increase in demand for food has resulted in an expansion of croplands by encroaching on uncultivated areas including forest, shrub and bare land. This has resulted in deforestation and soil degradation. The area under human habitation and settlement land showed significant increase in the Vavuniya DS division over the 20 year period (1997–2017). A significant number of respondents (61 %) also indicated that the expansion of human habitation and settlement were the main driving force of the land use/cover dynamics in the study area.

Conclusion

It is concluded based on the result obtained from the study that the land use/land covers in the study area have altered significantly in 20 years. The decline in the area of bare land, water, and cropland & human habitation (1%, 2% and 12% respectively) and expansion of the area covered by the fallow land (5%), forest (8%) and built-up area (2%) clearly showed a shift in the land use / land cover in the study area. The water quality and accessibility will be adversely affected due to the alterations in the land cover and land use pattern. The expansion of fallow land and the built-up area may be responsible for the loss of water bodies in the study area. Hence, proper management systems and plans for reserving water should be implemented.

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A STUDY ON THE EFFECTIVENESS OF TRANSLATION STRATEGY IN TEACHING ENGLISH AS A SECOND LANGUAGE GRAMMAR AMONG THE TWO GROUPS OF STUDENTS AT THE UNIVERSITY OF JAFFNA

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Abstract:

The primary objective of this investigation was to recognize how far teaching strategy of translation promoted effective learning of English as a Second Language (ESL) grammar among the first year undergraduates of Faculty of Management and Commerce (MC) and the Ramanathan Academy of Fine Arts (RAFA) at the University of Jaffna and suggest feasible recommendations for the stakeholders based on classroom exploration. In order to accomplish this objective, mixed method research methodology was employed. Among the population, 50% of MC and RAFA were selected as two clusters. Then the selection test was conducted in order to identify a particular class group which contained maximum frequency where stratified sampling was used to select sample groups for MC (n = 46) and RAFA (n=39). Further, the sampled groups were divided randomly into two equal groups; control and experimental groups. The same experimental groups were selected for the participant observation. Based on their respective subject matter, tense, prepositions, question formation, voice and mixture of all these items in the form of error correction were tested after employing translation method of teaching. The results of t-test analysis in control group of students showed no statistically significant difference between pre-test and post-test. However, experimental groups in both cluster students showed statistically significant (p< 0.5) results. In quite contrast to the quantitative results, qualitative results from participant observation revealed that in teaching speaking skill, translation should be avoided. It also brought out multiple realities as to when to use translation, and when not, and how to use and also the quantity of translation. Therefore, this research finding establishes that the principled or the reasonable use of translation is essential in teaching English as second language grammar.

Keywords: Teaching strategy, Translation, Stratified sampling, Participant observation, Grammar of English as a second language.

Introduction

A study on the effectiveness of Translation Strategy in Teaching English as a Second Language grammar at the University of Jaffna" is an exploration of the effect of two languages in teaching specific aspects of English as a Second Language grammar. In this study, both Translation Strategy and Bilingual teaching are interchangeably used. The two distinct disciplines involved in this study are: Faculty of Management and Commerce and Ramanthan Academy of Fine Arts. The medium of instruction in the Faculty of Management and Commerce is English and the subject matter (content) is taught where as the medium of instruction in Ramanthan Academy of Fine Arts is Tamil and their course component is performance oriented. As such, former have some sort of exposure in the second language at least in the academic sense and are relatively better than the students of latter. However, the fact is that they are still in the process of acquiring the second language, and there is the possibility of picking up the second language with the passage of time (four years).University of Jaffna is chosen as a venue of this research due to many valid academic reasons. The first and the foremost reason is unsatisfactory proficiency level of graduates in English. They are unable to compete in the job market as they do not perform well and impress in the job interviews. It is quite regrettable to note that there are humiliating comments over this issue in Jaffna. Justification also derives from the present researcher himself on the part of students when correcting their answer scripts. Other researchers also reported the above phenomenon in their studies. Canagaraja (1993) pointed out that the desire of students of University of Jaffna at that time was learning only the grammar of L2 in a product oriented manner in order to pass the ESL course and fulfill a socio- economic necessity. But Sivaji (2011) stated that the grammatical accuracy in L2 writing seemed to be at satisfactory level in 1993, but at present, teachers of the University of Jaffna observed a high percentage of grammatical inaccuracies in the L2 writing of their students. Teachers are trained in monolingual method of teaching English, that is teaching English only through English. As such, they blindly and unquestionably follow English only policy. In order to find a solution to this problem, the researcher explored the possibility of using the strategy of translation as a teaching method. However, this strategy has been criticized and debated. Further, this study was undertaken at a time when the strategy of translation was re-emerging as a new field in the universities. Therefore, its findings will suggest feasible and effective recommendations for the stakeholder based on classroom exploration.

Literature review

In this sense, definitions of translation, and different teaching methods with the use of translation strategy, arguments for and against in using it in classrooms and related studies provide a necessary background for the research problem.

As the terms Translation Strategy and Bilingual teaching overlap in this study, both are interchangeably used. Haugen's definition on Bilingualism in this sense serves as the starting point, in which he proposes (1953:7) "the points where a speaker can first produce complete meaningful utterances in the other language". Similarly,

Macnamara (1996) proposes that a bilingual is anyone who possesses a minimal competence only in the one of the four language skills. However, Bloomfield (1935: 56) defines bilingualism as native–like control of two languages. Another term related to bilingualism is Biliteracy. It was Hornberger who introduced the concept of biliteracy by bringing together the theoretical field of bilingualism and literacy in order to explain the complexity of bilingualism. According to her, the definition of biliteracy is that "any and all instances in which communication occur in two (or more) languages in or around writing" (2003:35).

Historical view on the issue of teaching ESL grammar and translation

Several hundred years ago, bilingual teaching was the 'norm' with students learning through translation. In the 19th century, this trend slowly reversed itself towards monolingual approach. The reason was the students of translation method were unable to use the language even after studying it for a longtime. But for the last three decades, there has been growing interest in studying the consequences of the use of translation in English classroom. Several studies have been undertaken on this issue of translation by Atkinson(1987) ,Auerbach (1993) and Miles (2004). According to Harmer (2001), the use of translation in the EFL and ESL classroom was thought as uncommunicative, boring, pointless and irrelevant. Brown (2000:16) commented this method as, "virtually nothing to enhance students' ability in the language. Due to the above reasons, dissatisfaction for grammar translation method grew and direct method was emerged. The Direct Method got its name from the fact "that meaning is to be conveyed directly in the target language through the use of demonstration and visual aids, with no recourse to the students´ native language." (Larsen-Freeman, 2000:23). The goal of the Direct Method was communication in the target language. Another method that grew partly out of reaction against the limitation of grammar translation method, and partly out of the war time demands was audio lingual method. Like the direct method, the audio lingual method advocated that students should be taught a language directly, without using the students' native language to explain new words or grammar (Richards and Rodgers 1986).

Arguments for and against the use of translation

Language teaching methods had undergone radical changes in terms of arguments for and against the use of translation. The biggest problem without using translation method was that it was very impractical (Phillipson, 1992:191). One reason was that most English language teachers worldwide were non-native (Harbord 1992: 350, Hawks, 2001:50). Another reason was that to enforce the sole use of the Target Language could often lead to a reduced performance on the part of the teachers, and the alienation of students from the learning process (Pachler & Field, 2001, p85). Not only that, but excluding L1 could lead to a higher dropout rate in ESL schools, whereas when L1 was permitted, researchers and teachers alike report much more positive results (Auerbach, 1993:18).

Basically, mother tongue was a resource in the second language classroom as it had cognitive, psychological and linguistic functions. According to Anton & DiCamila (1998), it played a scaffolding role in collaborative tasks, and it was a source of cognitive support for students' language analysis and performing higher level tasks (Storch and Wigglesworth 2003). Another benefit of using LI was that it reduced affective barriers to English acquisition and allowed for more rapid progress in ESL. It also acted as a source of students' schemata which could help in acquiring the target language, although some of its practices might deny its appropriateness. Here, the students' schemata meant that students' thinking, feeling and artistic life was very much rooted in their mother tongue.

Arguments against the use of translation

Arguments against the use of translation were discussed under the following three subtitles introduced by Cook (2001). Among these three arguments, maximum provision of L2 argument was the crucial one because it has some sense in it.

1.   The L1 acquisition argument

2.   The language compartmentalization argument

3.   The maximum provision of the L2 Argument

Firstly, the general assumptions of the L1 acquisition argument is that L2 was acquired like L1 through English. Similarly, Krashen (1983), proponent of Natural Approach argued that the students learn their second language very much in the same way that they learn their first language and that L2 was best learned through massive amounts of exposure with limited time spent using L2 (Tang, 2002).The language compartmentalization argument was not supported either by research or practice. There were more than 150 studies against this argument (Cummins 2002: 61). The language compartmentalization argument does not correctly represent the working of the mind. Finally, in comparison with the above two arguments, this maximum provision argument carried much weight because maximum exposure in target language is an important fact.

From Phillipson's (1992:193) point of view, this rapid spread and dominance of English, both home and abroad has been labeled as linguistic imperialism. Political and practical reasons (of teacher's, not the student's) were another cause of rise of English-only policy in the classroom and the exclusion of mother tongue. Those who used mother tongue were punished (Phillipson1992:187). The Makere report in 1961(cited in Phillipson, 1992:185) further reinforced the idea of using nothing but English in the classroom. There were five basic tenets originating from this report, which have been called into question, but which were taken as the 'truth', at the time. They were:

1.   That English should be taught in a monolingual classroom.

2.   The ideal teacher should be a native English speaker.

3. The earlier English is taught the better.

4. The more English used in the classroom during lessons, the better.

5. If other languages are used, English standards will drop.

The researcher himself intents to find out objectively as to what extent the strategy of translation works successfully through this study though there were arguments for and against. Prior to this, the effectiveness of translation as a teaching method in teaching English as a second language was reviewed against the historical background of teaching methods.

Research on translation strategy in teaching English as Second Language Teaching or Bilingualism

Historically, there were three broad overlapping periods of research on Bilingualism or Translation Strategy of Teaching English as Second Language Teaching and IQ has developed (Baker 2001).

1. The period of detrimental effects

2. The period of neutral effects

3. The period of additive effects

The early research on bilingualism, demonstrated that bilingualism was a negative phenomenon. The conclusions of these studies were too in favor of monolingual teaching, that is English ought to be taught through English, not by the use of L1, which has to be prohibited in the classroom.

However, the study undertaken by Pearl and Lambert (1962) was actually a turning point and watershed in redirecting the focus of bilingual research from the deficit perspective to one that was prepared to acknowledge the positive, or additive, dimension of bilingualism. After this breakthrough, an extensive body of literature has been generated over the last three decades. Some of these literature reflected views by proponents of the practice (Atkinson, 1987; Auerbach, 1993; Butzkamm, 2003; Cummings, 2009; Macaro, 2005 and 2009; and Swain &Lapkin, 2000); while others contained opinions by its opponents (Canal and Swain, 1980; Duff and Polio, 1990; Ellis, 1994; Krashen, 1982; and Swain, 1985).

In the above research studies, most researchers while arguing for the option of using L1in the classroom, also cautioned against the overuse of it. The reasons for using mother tongue were also discussed. They were: to explain grammar rules, to clarify the meaning of difficult words and concepts and to establish close relationship between students and teachers.

So far, the discussion on research on bilingualism has not covered the Sri Lankan context. In the next subsection, research on bilingualism will be based on Sri Lankan context.

Use of Tamil as mother Tongue (L1) in teaching English as a Second Language

Shriganeshan (2011) conducted study on the use of mother tongue and local culture in developing English proficiency. He adopted an ethnography study with the group of third year students twenty in number for three weeks at the Vavuniya campus. The objective of this study was to see whether the general language proficiency could be promoted using mother tongue and local culture.. Research findings showed that at the end of the three- week programme, a lot of language learning seems to have taken place.

Another study to be reviewed here is an experimental method conducted by Suntharesan (2012) at the University of Jaffna. The study makes an important contribution to second language teaching, particularly in the area of grammar. The objective of his study is to discuss how mother tongue can be effectively used in certain linguistic areas in order to motivate students and promote their language proficiency faster.

The study undertaken by the present researcher is different from the two studies because it involves mixed method. Quantitative results were explained by qualitative research in more detail in depth way. Ethnography study of classroom observation is conducted to explore and discover how bilingual instruction works in natural setting as presented in the research question. In the next chapter, research methodology this mixed method will be discussed.

Teaching English grammar through the use of translation of Tamil is a field that has not been explored very extensively. Further, using too much mother tongue also leads to deprivation of valuable input of L2.Whatever it may be this study was undertaken at a time when translation studies re-emerges as a new field in the Universities. Therefore, a study on this issue provides valuable insights.

Research methodology

It is found from the review of literature that strategy of translation in teaching grammar of English as a Second Language is really a problem, and set the scene for this particular study. Therefore, in order to find a solution to this problem, the mixed method research methodology was designed (Creswell 2009). In this mixed method research, experimental method in the form of classroom study was employed as a quantitative study in which the test was the main instrument. Participant observation was employed as a qualitative study.

Quantitative study (experimental method) was explained by qualitative instrument (participant observation).The same experimental groups from Management and Commerce and Ramanathan Academy of Fine Arts were selected for the participant observation. .

In order to achieve this objective, the present research was guided by these two research questions:

1) Does teaching strategy of translation promote effective learning of specific aspects English grammar at the University of Jaffna?

2) How far teaching strategy of translation promotes effective learning of specific aspects English grammar at the University of Jaffna?

The objective of this investigation was to find out how far employing teaching strategy of translation effectively promotes learning process of grammar of English as a Second Language (ESL) and checking the effectiveness of this strategy. The classroom investigation was performed with an intervention programme for one semester consisting of approximately four months or a period of 40 contact hours with unlimited casual contact hours to investigate whether teaching of grammar through bilingual instruction.

Sample

First of all, the technique of cluster sampling was adopted in the quantitative study as it involves natural but relatively homogeneous groupings as in the case of Management and Commerce and Ramanathan Academy of Fine Arts. Then, within these two cluster samples, simple random sampling method was used to select half of the population from each group and then selection test was conducted in order to identify particular class interval groups of maximum frequency (stratified sampling method as mentioned below in detail). This maximum frequency groups were equally divided as experimental groups and control groups.
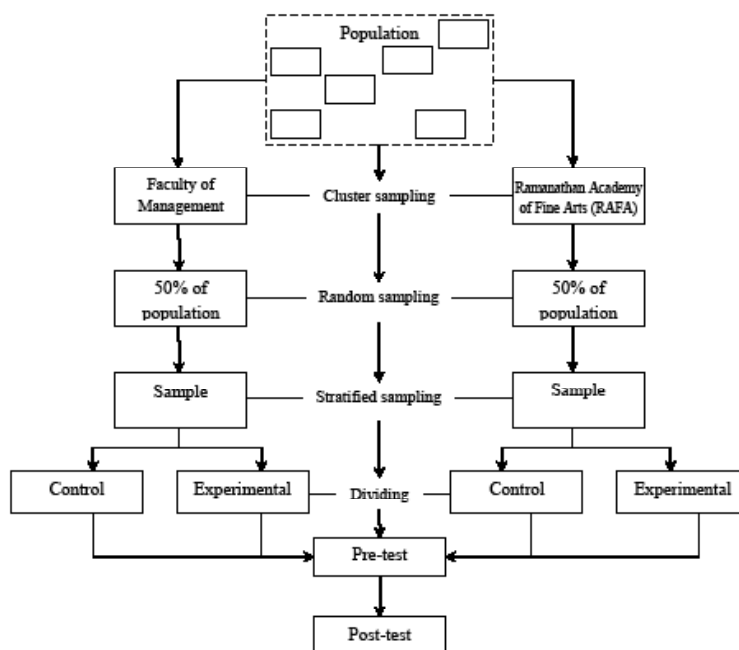

Figure 1: Statistical methodology applied in the research to find the effectiveness of using mother tongue in English language teaching

Among the population of 190 students of first year Commerce and Management undergraduates of university of Jaffna, 50% that is 95 were randomly picked up as samples. Then the selection test was conducted in order to identify a particular class group which contains maximum frequency (the range of marks among the students is approximately same). On the basis of stratified sampling 46 subjects were picked up. After that, the 46 subjects were equally divided into two halves. One group is control group while the other one is experimental group.

Similarly, out of the population of 156 first year students of Ramanathan Academy of Fine Arts, 78 undergraduates (50%) were randomly selected as samples for the selection test. From this selection test, a class interval group of 39 students of maximum frequency were taken as subjects for experimentation on the basis of stratified sampling. Among these students, 21 were assigned to control group while 18 were assigned to experimental group.

3.2. Hypothesis

Based on these observations, the research questions were framed. In order to find the answers to these research questions, the following hypothesis were formed.

Control / experimental Management & Commerce

H1: Teaching strategy of translation promotes effective learning of specific aspects of English as a second language grammar in the Control / experimental groups of Management &Commerce at the University of Jaffna.

H0: Teaching strategy of translation does not promote effective learning of specific aspects of English as a second language grammar in the Control / experimental groups of Management& Commerce at the University of Jaffna.

Control / experimental Ramanathan Academy of Fine Arts

H1: Teaching strategy of translation promotes effective learning of specific aspects of English as a second language grammar in the Control / experimental groups of Ramanathan Academy of Fine Arts at the University of Jaffna.

H0: Teaching strategy of translation does not promote effective learning of specific aspects of English as a second language grammar in the Control / experimental groups of Ramanathan Academy of Fine Arts at the University of Jaffna.

Experimental method

In a quantitative sense, experimental method was adopted where the hypothesis is "Teaching strategy of translation promotes effective learning of specific aspects of English as a second language grammar". In this experimental method, teaching

strategy of translation was an independent variable and gaining grammatical competence was dependent variable. As for the intervention, the experimental group of management which comprised twenty three students was taught using translation as a strategy. The control group of other twenty three students was taught only through English. Similar treatment was given to the Ramanathan Academy of Fine Arts at the University of Jaffna in which 21 were assigned to control group while 18 were assigned to experimental group.

In operationalzing quantitative method, hypothesis was formed from the research questions. Then experimental method is used in which test is the main instrument.

Test as a main instrument

In the quantitative study of experimental method, tests were used as the main instrument for measuring the results of experiment. There were five main questions based on tense, prepositions, question formation, active /passive and miscellaneous questions of error corrections. Unlike the other questions, the test on tense and preposition are based on their respective subject matters that is content based (management studies and commerce and fine arts). Post test is also administered in the same manner. Therefore, this research study was undertaken to establish whether the use of mother tongue facilitates or hinders the learning of 'tense' ' prepositions' and 'question formation'.

Participant observation

Participant observation was employed in this study in order to observe directly as to how translation plays its role in learning second language grammar. In this sense, the experimental groups of Management and Commerce and Ramanathan Academy of Fine Arts were used for the participant observation. Further, this qualitative instrument further explained the findings of Quantitative study (experimental method) in an in-depth manner. In participant observation, verb, preposition, question formation and voice were taken into account as to when to use L1, and when not, and how to use L1 and also amount (quantity) of L1 In the next section, presentation as well as analysis of data would be discussed.

Results & discussion

The results and discussion consisted of presentation of collected data in an organized manner and analysis of the data in relation to the hypothesis set out in the previous chapter. As it was the mixed method, both quantitative data as well as qualitative data were presented for analysis after triangulation. The data triangulated were discussed in the next Section.

Table 1: Summary statistics for students' performances in study groups

Parameter	Management & Commerce				RAFA			
	Control		Experimental		Control		Experimental	
	Pre-test	Post-test	Post-test	Pre-test	Pre-test	Post-test	Pre-test	Post-test
Observations	23		23		21		18	
Mean	24.87	22.83	24.52	34.00	34.29	39.14	36.56	61.78
Variance	29.15	43.21	19.62	97.45				
Degrees of freedom (df)	22		22		20		17	
t-value	1.67		4.39		1.36		5.68	
t-critical	1.72		1.72		1.73		1.74	
p-value	0.05447		0.000		0.094		0.000	
Tested difference	Post☐Pre		Post☐Pre		Post☐Pre		Post☐Pre	
Test tail	Right-tail		Right-tail		Right-tail		Right-tail	

The results of t-test analysis in Control group of students in both Management & Commerce and RAFA showed, statistically no difference (p>0.05) among pre-test and post-test. Meanwhile, Experimental groups in both faculty students showed statistically significant results. Statistical analysis strongly proved that teaching English language using through translation method is effective when comparing with the next approach which utilized the same teaching English using English-medium.

Analysis of participant observation

Table 1

Participant Observation	Purpose of using translation	Time (Minutes)	Percentage
Teaching 'be' verb	Explaining grammar point	15	12.5 %
Simple present (Description of persons) 1. Listening (as an integrated skill of speaking and writing)	Explaining the task, error correction and explanation, Teaching grammar point. Once, listening as an integrated skill of speaking and writing started, no L1was used.	10	8%
2. Reading	Explaining the task, Explaining grammar point including preposition	05	8%

3 Language games (Description of objects)	Giving instruction, for correction of errors, teaching grammar points, the structures, vocabulary. Both L1 &L2 were used in parallel.	10	16%
Teaching present continuous	Providing different context	05	8%
Teaching speaking skill	No mother tongue	--------	-------

Communicative method Question Formation (Identifying picture)	Explaining the task and teaching grammar rules. No L1was used when the classroom interaction was started	5	8%
'Did' form	Explaining the task of language game, explaining the syntax in question formation and simple past negative	10	8%
Do/Does form	Explanation of task, Providing linguistic explanation, teaching word order.	15	12.5%
Past continuous tense	Providing contextual situations to establish grammatical meanings including preposition.	15	25%
Eclectic method Teaching Active /Passive Language game	Group work	5	8%
Translation as Teaching method	Sentence was narrated in mother tongue and the students translated it in English.	15	25%
Deductive and Inductive methods Simple past tense	Teaching grammar rules, and providing context.	10	16%
Prepositions	Teaching grammar rules, and providing context	**5**	8%

As summarized in the table, the amount of time spent for employing translation and its percentage for teaching different grammar was shown. Analysis of participant observation showed that in teaching grammar points and explanation, giving instruction, correction of errors, translation is necessary. As a result, students were motivated to use English in the classroom. In teaching present continuous, mother tongue is utilized for providing different context. Providing different context in mother tongue enables the students to construct more sentences creatively and appropriately. What the researcher observed is different teaching methods take different amount of mother tongue. In this communicative method, classroom technique of language game was used with the five minutes explanation of instruction in mother tongue. Using translation for teaching voice does not work. Even teaching preposition, translation was not very much effective. Finally, no mother tongue was used in teaching speaking skill.

On the basis of analysis of both qualitative and quantitative data, the conclusion the researcher arrived at would be discussed next.

Findings and conclusion

Findings of quantitative study

In this mixed method, quantitative study of experimental method of both faculties Management & Commerce and RAFA established strongly that bilingual instruction promotes effective learning of specific aspects English grammar at the University of Jaffna.

Findings of qualitative study

The most important findings of participant observation are that learners' ability to generate basic sentence in English in 'be' verbs. This ability is developed largely due to the explanation of grammar point in the mother tongue. Further, the explanation of non existence of Tamil equivalent and comparative study of this difference between Tamil and English bilingually enhanced their knowledge. Another most important point is that 'be' verb and in its connection with 'have' verb and 'adjective'. In this respect, the purpose of mother tongue is twofold: first, to explain this process of transformation from 'have' verb to 'be' verb; and second, its use in writing for stylistic purposes. In addition, mother tongue explanation enabled the students to sort out form function relationship between present continuous and simple present tense because present continuous is often overused for simple present. Further, in present continuous, the students were able to construct sentences when the contextual situation is provided in mother tongue. The next important finding is that listening skill is the most powerful skill as it generates speaking as well as writing skills with the least amount of mother tongue usage (only for the instruction). Mother tongue is used extensively on subject verb agreement in third person simple present in the extension activity. The other evidence of using mother tongue is found in constructing

short piece of writing in describing objects through language game. In this activity, mother tongue is also used for correcting errors when the students constructed sentences creatively. Finally, the evidence of participant observation established that the use of Mother tongue does not work successfully in fluency based and two way interaction of pair work

Conclusion

It was evidenced from the mixed method research that teaching strategy of translation promoted learning process of grammar of English as a Second Language among the first-year undergraduates of Faculty of Management and Commerce (MC) and the Ramanathan Academy of Fine Arts (RAFA) at the University of Jaffna. Statistical analysis of quantitative study strongly supported the Translation method in teaching English as a second language grammar. Quantitative study (experimental method) was explained by qualitative study such as participation observation as to when to use translation, and when not, and how to use and also the quantity of translation. However, an important finding is that when engaged in speaking skill, translation method should be avoided as it is a fluency based, and performance oriented activity. In this sense, using mother tongue definitely interrupts communication as it is a two way interaction. Therefore, this research finding establishes that the principled or the reasonable use of mother tongue is essential in teaching English as second language grammar

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ETHNIC ISSUES OF THE TAMILS OF SRI LANKA AND THE POLICIES ADOPTED BY THE TAMIL NADU GOVERNMENT DURING THE TENURE OF THREE CHIEF MINISTERS

- A Comparative study

Kandiah Arunthavarajah

Abstract

The beginning of the ethnic problem in Sri Lanka is seen as a part of their "Divide and Rule strategy" in the countries which were under the British rule. After the country got her independence, the impact of the aggravated ethnic problem of Sri Lanka began to affect the neighbouring country, India especially the Tamil Nadu State. It started to interfere into the ethnic problems in Sri Lanka as their national benefits. In this regard, the former Chief Ministers of Tamil Nadu State Karunanithy, M.G. Ramachandran and Jeyalalitha are considered to be the chief ministers who had interfered into the Sri Lankan Tamils' affairs. In the case of M.G. Ramachandren, he was the one who had direct contacts with the movements which fought for the liberation of the Tamils of Sri Lanka. He was the one who had tried his best to resolve the Sri Lankan Tamils' ethnic problem. In the five terms of Karunanithy as Chief Minister of Tamil Nadu, the four terms, the ethnic problems in Sri Lanka aggravated. As a result, he had lost one term of office as Chief Minister. He was actively engaged in the efforts in resolving the Tamils' ethnic problems. However, he was criticized for not taking timely action to avoid the "Last War" (Iruthi Uththam) when it was at its peak. As far as Jeyalalitha is concerned, although she engaged herself in the Tamils' ethnic problem to find a permanent political solution, she did not have strong policy till the end of her tenure. Her activities showed that she was the one who had some policies for and against the Tamils' affairs of Sri Lanka from time to time. However, there are differences in policies which were adopted by the three of them with regard to the Tamils' affairs of Sri Lanka. Therefore, this study clarifies their policies and activities with regard to the Sri Lankan Tamils' ethnic affairs.

Key words: Tamil Refugees, Ethnic Problem, Confronted Policies, Political background

Introduction

Behind one reason for India especially the Tamil Nadu to get involved in Sri Lankan Tamils' affairs is that Sri Lanka is its neighbour country. The main reason was that there has been an outcome of the long standing political and cultural relationship between the Sri Lankan Tamils and the people of Tamil Nadu. It is true that the Tamil Nadu very well knows the depth and the root of the ethnic problems which were going on in Sri Lanka. Although the Central Government of India had taken steps with regard to the ethnic problems in Sri Lanka for a long time as its territorial benefits, it is evident to see that the people of Tamil Nadu who have the navel cord relationship with the Sri Lankan Tamils always have sympathies on the Sri Lankan Tamils. When the ethnic problem had got aggravated in Sri Lanka since 1980ˢ, Sri Lankan Tamils started to migrate to Tamil Nadu as refugees, and India started to interfere into the politics of Sri Lanka. The then Chief Ministers of Tamil Nadu, Karunanithy, M.G. Ramachandren, and Jeyalalitha took their initiatives towards the ethnic problem of Sri Lankan Tamils, by pressurizing the Indian government and warning the Sri Lankan Government. However, the actions of these three personalities did not have similar characteristics or principles. This study clarifies the different approaches that these three personalities undertook with regard to Sri Lankan Tamils' affairs. The information and data for the study based on historical, comparative and critical approaches were obtained from interviews, observations, conversations, contemporary newspapers, magazines, and the website. The main hypothesis of the study is that the initiatives which the three chief ministers undertook with regard to the ethnic problem of Sri Lanka were not similar. The main problem of the study is that the political factors were behind all the efforts initiated by them with regard to the ethnic problem of Sri Lanka. The main objectives of the study are to bring to light the background of the interference into the Sri Lankan Tamils' affairs by the above said three Chief Ministers, the initiatives that they undertook and the challenges that they encountered. It is also notable that the literature reviews were not directly related to the said study.

The Interference of India

In the beginning, the Central Government of India did not have much concern about the Sri Lankan Tamils affairs. During the introduction of "Sinhala Only Act" in 1956 and the struggles of Sri Lankan Tamils thereafter, the Central Government of India was maintaining a very good relationship with the then Prime Minister of Sri Lanka, S.W.R.D. Bandaranaike. In 1980, Indira Ghandhi was the Prime Minister of India adopted anti American policy and the attention of America drew on the neighbouring countries of India such as Sri Lanka and Pakistan. (Wilson, 1988). India also did not like the influence of America on its neighbouring countries continuously. In these circumstances, India began to interfere into Sri Lanka's affairs for its own territorial benefits while the ethnic problems of Sri Lanka were getting aggravated. It is true that Sri Lanka had trust on America to solve the ethnic problem of Sri Lanka and the Central Government of India came forward to help the Sri Lankan Tamils' affairs as

a challenging against America. At this juncture, the security of India was considered important.

Since 1980s, as the Sri Lankan Tamils' problems were getting aggravated, many of the Tamils who were living in the Eastern and Northern Sri Lanka started to migrate towards Tamil Nadu as refugees. In this period, many Liberation Movements including the Liberation Tigers of Tamil Eelam (LTTE) started to function widely based in Tamil Nadu (Balasingham, 2003). Immediately after the "July Riots in Sri Lanka, there was a massive support for Sri Lankan Tamils and their liberation struggles from Tamil Nadu. This led the Tamil Nadu politicians to support the Sri Lankan Tamils and they started to get votes from the people of Tamil Nadu during the elections in India. In the course of the time, both the Central Government of India and the Government of Tamil Nadu had to interfere directly into the internal affairs of Sri Lanka. Both Sri Lanka and India have accused each other as India interfered into their internal or national affairs. Sri Lanka accused of India providing training to armed groups in particular. When M.G.Ramachandren who was a sympathizer of the Sri Lankan Tamils was as the Chief Minister of Tamil Nadu, tension prevailed between the Tamil Nadu state and the Government of Sri Lanka.

M.G.Ramachandren and the Sri Lankan Tamils' affairs

When the Sri Lankan Tamils' ethnic problem was getting aggravated after 1980, the people of Tamil Nadu expressed their concern over the Sri Lankan Tamils in many different forms. They expressed their condemnations on Sri Lankan Government. They supported the people who went there as refugees and consoled them. Above all, when the Indian Army carried out their hooliganism in the Eastern and Northern regions of Sri Lanka in the name of the Indian Peace Keeping Force (IPKF), the people of Tamil Nadu expressed their opposition without considering the IPKF as their own forces ('Jeyalithavin Varalaru', 2007). They raised their voice for the Sri Lankan Tamils beyond their politics. All political leaders including the Chief Ministers at that time acted in favour of the Sri Lankan Tamils and engaged in finding solutions to the ethnic problem of Sri Lanka.

Among the Chief Ministers of Tamil Nadu, it is true that whoever writes the history of the ethnic problem of Sri Lanka, it is inevitable to avoid M.G.Ramachandren. The reason was that M.G.R. had a blood relation with Sri Lanka and he was a real sympathizer of Sri Lankan Tamils. When the ethnic problem of Sri Lanka was its peak, he was the Chief Minister of Tamil Nadu. He wished all the Tamil movements which struggled in the name of separate Tamil Eelam would be united. In the latter part of 1970s, even when he was not the Chief Minister and some Eelam supporters like Kuttimani and Thangathurai were arrested in India, he requested the Chief Minister of Tamil Nadu, Karunanithy not to hand over them to the Government of Sri Lanka, but, Karunanithy handed over them to the Government of Sri Lanka. It is very rare to find a man like M.G.R. who lived as an honest man for the people in political life and general life ('Jeyalithavin Valkkai', 2009). He extended all his assistance and supports to the Sri Lankan Tamils personally and through the Central

Government of India and the Government of Tamil Nadu. There are no differences of opinion that he was the true sympathizer of the Sri Lankan Tamils even at the time of his death bed.

There have been two different opinions about the ethnic problem which prevailed in Sri Lanka and the liberation struggles within India even today. That is to say, the stand of the Central Government on the ethnic issues of Sri Lanka is different from that of the Government of Tamil Nadu. It is notable to highlight here that there were instances where the Government of Tamil Nadu had compromises with the Central Government of India willingly or unwillingly. During the situations of compromise, some of the rulers of Tamil Nadu had ignored the ethnic issues of Sri Lankan Tamils in order to achieve their own political agenda, benefits and powers. M.G.R was away from gaining these kinds of narrow political benefits. Since 1980s onwards, M.G.R supported the Sri Lankan Tamils and extended his supports to the Tamil liberation struggles in Sri Lanka directly and indirectly. He assisted the liberation movements ignoring the opposition of the Central Government of India. There were meetings with the leader of the Liberation Tigers. He donated a sum of money to LTTE from time to time from his own pocket. He tackled some of the problems raised by the Central Government of India without taking into account the opposition from the Central Government of India. He accepted that the "India – Sri Lanka Act" (1987) considered only the geographical benefits of India. (Balasingham, 2003). Above all, there are news that he was very supportive to the establishment of Tamil Eelam by LTTE. As such, the late M.G.Ramachandren was the unprecedented leader in terms of the ethnic issues of Sri Lankan Tamils.

M.G.R. was bold enough to take steps to solve the ethnic problems of Sri Lanka and acted to implement them with the Central Government of India during his tenure as Chief Minister of Tamil Nadu. He continuously emphasized that the welfare of Tamils in Sri Lankan should be preserved and whenever the Central Government of India proposed the solution packages to the ethnic issues of Sri Lanka he took every possible step forward to move them to the next stage with the participation and meetings with the Tamil Nadu Politicians and the Tamil Movements. He was very much interested in seeing that the impact of his political career should become the right solution to the ethnic issues of Sri Lanka (Arunthavarajah, 2016). An attempt was made for a Peace Accord between the Government of Sri Lanka and the Movements of Liberation backed by the people and the other political parties of Tamil Nadu and M.G.R. in 1985. The negotiation was held between Sri Lanka and the other movements including LTTE in Thimphu. After the demise of M.G.R., Karunanithy, the former Chief Minister of Tamil Nadu, changed himself as the sympathizer of the Sri Lankan Tamils. However, it is true that we cannot see Karunanithy in place of M.G.R. Everybody will agree that if M.G.R. had been alive, the hooliganism of the Indian Peace Keeping Force would not have happened in the Eastern and Northern provinces of Sri Lanka. Karunanithy could only express his concern over it but, he could not do anything concrete at that time.

Karunanithy and the Sri Lankan Tamils' affairs

Kanunanithy was another Chief Minister of Tamil Nadu, India who was a man of importance when the Sri Lanka Tamils' affairs were getting aggravated. He is looked at as a person both for the period of boom and the recession of the Sri Lanka Tamil Liberation Movements. He was bravely engaged himself in the Sri Lankan Tamils' affairs and as a result, he was the one who lost his government. It is noteworthy to mention here that next to M.G.R, he is well reminded of his involvement in the Sri Lankan Tamils' affairs by all and Karunanithy had a lot of influence from most of the Sri Lanka Tamils with regard to their affairs.

There were many things related to him that started to leak in the wake of his demise. One of them was about his stand for the Tamil people of Sri Lanka during the final stage of the war that happened in Sri Lanka. At the time of the final phase of war, there were opinions in the media for and against Karunanithy who was the Chief Minister of Tamil Nadu. However, we should look into it from the common stand. Even before, Karunanithy became the Chief Minister of Tamil Nadu, he was keen on the problems of Tamils in Sri Lanka and took many initiatives for the welfare of them. It should be well studied as to how far it was suitable to criticize him taking into account only the particular event that occurred in 2009. There have been several criticism levelled against him by some people regarding the final phase of the war in Sri Lanka. He was having fun along with the Central Government of India; He did not pressurize the Central Government of India; he could have left the collusive Government. He was a person of power hungry. We must understand one thing that without talking about Karunanithy this discussion will be not complete because Karunanithy once told that the decision of Central Government of India about the Tamils' affairs in Sri Lanka was his decision. Jeyalalitha who once told, "If there is a war, the people are liable to die" would have done the same if she were the Chief Minister of Tamil Nadu in place of Karunanithy.

After 1983, the Tamil youths were given military training and other facilities in Tamil Nadu. It would not have been done without the help of the Central Government of India. The politicians know their country and their own people first. Their people's welfare is their prime concern. They can think about any other things later. That is natural. When Rohingyas were roaming from Myanmar as refugees, though there were many Islamic countries where Rohingyas live, they did not give them refugee asylum (Arunthavarajah, 2017). But it cannot be denied that Tamil Nadu gave asylum to many a Sri Lankan Tamil refugee. It has been extending its supportive hands towards the Sri Lankan Tamils so far. Karunanithy is the person who faced a lot of problems because he acted and spoke for the Sri Lankan Tamils. He was criticized by most of the people for the reasons like the assassination of Rajiv Ghandhi, former Indian Prime Minister, the confrontations between Tamil Liberation Movements and the difficulties and inconveniences caused to the people of Tamil Nadu by them. During the tenure of Karunanithy, the members of the Tamil Liberation Movements were roaming around Tamil Nadu with arms and weapons in public. They were given

free transport facilities like the Sri Lankan refugees. Finally, as a result, Karunanithy was made losing his power in 1991 by the Central Government of India. The reason that the Central Government of India told behind this topple of the   power was that the law and order in Tamil Nadu were disrupted during the Karunanithy's regime in Tamil Nadu (Arunthavarajah, 2017).

From the latter part of 1989, Jayalalitha propagated that there were close relationships between D.M.K (Dravida Munnetra Kazhagam) and the LTTE in order to capture the power in Tamil Nadu. She joined hands with Subramaniam Swami, a former M.P, So. Ramasamy, a Journalist and Ram, Editor, The Hindu and created a massive wave of opposition against Karunanithy in Tamil Nadu and finally she succeeded in it. She told in public that there was a danger to her life by both Karunanithy and the LTTE. In the meantime, the assassination of Rajiv Ghandhi also occurred when he had come for the Parliamentary election propaganda. Many connected Karunanithy with this murder. The murder of Rajiv Ghandhi happened in Tamil Nadu and everybody knew that the accusation would be put on Karunanithy and he would be defeated in the election. In this background, his actions would have been planned in order to safeguard his government and himself in the final phase of the war (Arunthavarajah, 2017). Therefore, it is true that Karunanithy did not want himself trapped in the unnecessary inconveniences again. After the topple of the power, the relationship between D.M.K and Congress was very close and cordial. He did not want the relationship drifting apart. It is notable to highlight here that Indra Ghandhi put many accusations against D.M.K government in 1976 and the Karunanithy's Government was toppled. Under this circumstance, there were opinions that Karunanithy did not allow any public rallies in favour of Sri Lankan Tamil affairs in Tamil Nadu during his tenure in the ninties.

Jeyalalitha adopted two different policies on Sri Lankan Tamils' affairs namely one before 2009 and another one after 2009, but Karunanithy had never expressed his views against the Liberation Movements and Tamil Nadu in any instances. He was persistent in his policies. However, as mentioned earlier, it cannot be denied that he had some kind of negligence and instability towards Sri Lankan Tamil affairs because of the events that had already taken place.

When "Sinhala Only Act" was passed in Sri Lankan Parliament, Karunanithy made a condemnation against it in the convention held in Sithambaram at the age of 34. D.M.Kers including Karunanithy held a march in Tamil Nadu in support of the Sri Lankan Tamils' rights in 1961. Karunanithy and Anpalagan resigned from their post condemning the ethnic problem broken out on Sri Lankan Tamils in 1983. He met the then Tamil leaders including S. J. V. Selvanayaham and A. Amirthalingham and expressed his support. He looked after the people who went as refugees. He was engaged himself in many protests in support of Sri Lankan Tamils. He tried his best to unite Liberation Movements. He supported them. Jeyalalitha was the one who sent back the Sri Lankan Tamil scholars who went to the World Tamil Research Convention on the ground of security, but at the same time, Karunanithy was the one

who held Semmoli Convention and made Sri Lankan Tamil Scholars sit beside him. the Leader of LTTE who had close contact with M.G.R. was away from Karunanithy. At the same time, the former leader of TELO, Sri Sabaratnam joined Karunanithy. In the meantime, Karunanithy held a convention (TESO – Tamil Eelam Supporters Organization) in support of TELO and in favour of Sri Lankan Tamils in Madras in 1985. Many important Indian Leaders, Vajpayee, Deve Gowda and N.D.Ramarao participated in the convention, which was said to be the Eelam Support Convention (Arunthavarajah, 2017). K. Veeramani and Pala.Nedumaran were considered as instrumental Tamil Nadu leaders along with Karunanithy to hold this convention. In fact, though these were the outcomes of the opposition politics with M.G.R, there were some accountabilities in them. As the demise of Sri Sabaratnam and the death of M.G.R happened within a short period, LTTE was compelled to have contact with Karunanithy willingly or unwillingly. Karunanithy made several condemnations against the hooliganism of the Indian Army in the name of Indian Peace Keeping Force after 1987. Karunanithy was the one who wanted the IPKF expelled from Sri Lanka.

When the IPKF returned to India during the regime of V.P.Singh, Karunanithy who was the Chief Minister of Tamil Nadu did not go to the welcome function. Karunanithy was the one who bravely told that he would not go to the function to welcome the army who killed Sri Lankan Tamils.   It can be guessed from the statement of the Indian army officer, Colonel Ajith Pinthar who said after some time that even stray dogs had not come to welcome them who had returned from Trincomalee, Sri Lanka. Many criticized this incident as disrespect to the Indian sovereignty. There were news that when the Indian army were consolidating in Sri Lanka, Y. Gopalsamy who was the member of D.M.K came to Tamil areas in Sri Lanka by sea. He knew the situations prevailed at that time and met the leader of the LTTE secretly (Balasingam, 2003). The Eelam Support Rally organized by Karunanithy in 1995 and the hunger strike organized by Karunanithy in 2009 were politically motivated activities. Although they were criticized by some as funny actions, they were staged as the forms of struggle in support of Sri Lankan Tamils by Karunanithy.

There is no multi-talented experienced politician like Karunanithy in Indian Tamil Nadu politics. Some incidents which had occurred before and after the assassination of Rajiv Ghandhi had put him in trouble. In this circumstance, his support for the Tamil Eelam Liberation started to go towards instability. The main reasons behind this were the political compromises that he initiated and the inappropriate new collusions. As a result, he could not take any decisions independently violating these elements (Karunankaran, 2018). Karunanithy started to use Eelam struggle in accordance with the union or collusion that he had and in accordance with the situations prevailed in the provinces in his later period.

Jeyalalitha and Sri Lankan Tamils' affairs

If a question is asked whether Jeyalalitha who identified herself as the heir of M.G.R. followed M.G.R's policies and principles with regard to Sri Lankan Tamils' affairs, the answer would most probably be "No". In this regard, it can be said that all the efforts which she undertook did not satisfy the Tamils of Tamil Nadu and Sri Lanka. Even if she had done some actions really on the ground of sympathy for the Sri Lankan Tamils, they would have had some kind of political motivations in many instances. As far as Sri Lankan Tamils are concerned, they had utmost trust and a lot of confidence on her. The moment the news of her demise spread in Tamil Nadu, the Sri Lankan Tamils too were badly grieved.

In the wake of the death of Jayalaitha, Sri Lankan Tamils, the leaders of Sri Lankan Tamils, some Tamil Eelam Organizations and their supporters and Sri Lankan Diaspora deeply expressed their condolences. All activities of the Northern Provincial Council were stand still and postponed for a day. Condolence messages were read out in the Northern Provincial Council. The Chief Minister of Northern Provincial Council, C.V.Wickneswaran, R. Sampanthan, S. Sritharan, Sivajilingham, Tamil People Forum, the leaders of the Sri Lankan Tamils diaspora and the some Pro LTTE organization based in Europe countries issued messages on condolences on the demise of Jeyalalitha. Black flags were hoisted in business enterprises in the Northern and Eastern provinces in Sri Lanka on the day of her funeral. Many business enterprises were closed for business that day. Condolence meetings were held everywhere. It could be said that they were the respects accorded to her as Jeyalalitha had a great concern over Sri Lankan Tamils' affairs during her latter part of her life.

In the case of Jeyalalitha, She did not give prominent place for the Sri Lankan Tamils' issues in her early political agendas or activities. During the last period of time when M.G.R was alive and in power, Jeyalalitha was given important posts by M.G.R. Jeyalalitha was the one who was the leading propagandist in the M.G.R's political stages. There is no news that Jeyalalitha acted in favour of Sri Lankan Tamils even in one single instance during the last period when M.G.R was alive. Whenever M.G.R took initiatives in favour of Sri Lankan Tamils, It was Pandirutty Ramachandren who was there with M.G.R. (Balasingam, 2003).

Jeyalalitha was first elected as Chief Minister of Tamil Nadu in the Legislative Council general election held in 1991 (Vasanthi, 2012). The main campaign aspect that she highlighted to win the election was " the opposition against the Tamil Liberation Movements" especially "Opposition against Tigers" campaign. Jeyalalitha was able to secure numerous votes from the people of Tamil Nadu campaigning that Tigers were grown well during the tenure of Karunanithy and she would expel them out of Tamil Nadu which was completely contrary to the policies and principles that M.G.R had on Tamil Liberation Movements and Sri Lankan Tamils. The History would witness that during the tenure of M.G.R he managed a lot of disturbances and pressures from the Central Government of India for the Sri Lankan Tamils

(Balasingam, 2003). Jeyalalitha who won the election by campaigning against the Tigers engaged in implementing the promises which she had given in the election campaign. It is researchable to know as to how Jeyalalitha who was against LTTE changed herself in favour of Sri Lankan Tamils in later days.

After the death of Rajiv Ghandhi, the former Prime Minister of India, during the first office of Jeyalalitha (1991-1996), there were many restrictions imposed on the Sri Lankan Tamils in Tamil Nadu and their supporters. She was actively engaged in sending all Sri Lankan Tamils back to Sri Lanka especially after the death of Rajiv Ghandhi. She also said that if meetings or conferences were held in support of Sri Lankan Tamils in Tamil Nadu, legal actions would be instituted against the parties concerned. Thereafter, many of those who were supporters of Tamil Eelam movements from Tamil Nadu and persons who belong to several political parties were arrested and prisoned. Jeyalalitha had issued several reports during the rule of Karunanithy saying that due to the armed culture of LTTE in Tamil Nadu, there was a threat to the national integrity and the law and order were affected.

The law of "POTA" Act was imposed on Y.Gopalsamy and Pala Nedumaran. Several restrictions were imposed on those refugees who migrated to India from Sri Lanka. There were also several restrictions on ordinary Sri Lankan Tamils in getting visas to visit Tamil Nadu from Sri Lanka. She removed the quota system placed for the children of Sri Lankan Tamils in vocational colleges in Tamil Nadu. She banned Sri Lankan Tamil children being enrolled into colleges and schools ('Jeyalalitha', 2016)

Once, she said that LTTE had to be banned as it was a threat to her life. She continuously insisted the Central Government on it. In 2002, she made a resolution in the Legislative Council of Tamil Nadu that leader of the LTTE had to be arrested in Sri Lanka and brought to India. If the Sri Lankan Government could not arrest and deport the leader of the LTTE, the Law Council should request the Central Government of India to take necessary actions to send Indian Army to Sri Lanka to complete task. In 1987, M.G.R indirectly opposed the resolution that the leader of the LTTE had to be arrested and handed over to the Central Government of India and sending of Indian army to Sri Lanka. Karunanithy was the one who insisted that Indian army had to be expelled from Sri Lanka. It is notable here that Jeyalalitha indirectly supported that Indian army to remain in Sri Lanka. So, it shows that there were no changes in the policies of Jeyalalitha with regard to Sri Lankan Tamils affairs from 1991 to 2009. In this regard, Sri Lankan Tamils too did not see Jeyalalitha as their supporter in any circumstance.

When Jeyalalitha was the Chief Minister, she arrested and put behind bars many persons like P.Nedumaran, Y.Gopalasamy, Pandirutty Ramachandren, Ramadas and Pulaimaippiththan who were engaged in demonstrations in support of Sri Lankan Tamils. She took actions against those who expressed their condolences in Tamil Nadu whenever the members or the leaders of the Liberation Movements or public died in the war front in Sri Lanka. During the final phase of the war, she expressed

her views through a report published on January17 2009 "If there is a war, people are to die. Sri Lankan army never think of killing Sri Lankan Tamils. It is inevitable that innocent people are killed when a war happens". She then in 2011, completely changed her policy in favour of the Sri Lankan Tamils and for the demand of their separate Tamil Eelam. It was for the sake of the election and her action made all the people from the general public to the politicians shocked.

The critic Yatheenthra says that two resolutions were made in the Tamil Nadu Legislative Council during the term of Jeyalalitha. One of the resolutions in 2002 is that she proposed that leader of the LTTE should be hanged to death. The other resolution is that a referendum should be held for the policy of separate Tamil Eelam which the leader of the LTTE fought for (Yatheenthra, 2016). These two are contradicting to each other. The incident that the Tamil intellectuals from Sri Lanka including Professors Veluppillai, Sivaththamby, and Sanmugathas who arrived at the Chennai airport in order to participate at the World Tamil Research Conference in Thanjavoor in 1995 were sent back to Sri Lanka made all the Tamils in the world angry. It was said at that juncture that it would be a threat to the security of Tamil Nadu. The media and advisor swho guided Jeyalalitha were those who are against Sri Lankan Tamils and Liberation fighters. Some Journalists like the editor of Thinamalar, Ram the editor of Hindu Newspaper, and So Ramasamy, the editor of Thuklak, S. Supramaniyam Swami could be included in the circle. (Thevananth, 2016). It is not worthy to mention here that they were the people who supported Indo-Sri Lanka Accord and condemned the activities of Tamil Movements. The death of Rajive Ghandhi who was the close friend of Jeyalalitha might have been instrumental for her to adopt such policies.

Jeyalalitha's concern over Sri Lankan Tamils' affairs

Jeyalalitha was the one who changed her policies with regard to Sri Lankan Tamils from time to time in order to capture the power in politics and to satisfy the Central Government of India. Jeyalalitha was the one who started raising voice for the Sri Lankan Tamils who were badly affected during the final phase of the war from the mid of 2009 and became a sympathizer of the Sri Lankan Tamils. During this period of time, he was much praised by the media. She identified herself as the Tamil Eelam supporter. Her Tamil Eelam support and her activities with regard to Sri Lankan Tamils were extremely stronger than that of the long standing supporters of Tamil Eelam Liberation like Nedumaran, Seeman, Y.Gopalsamy., Thirumavalavan, Manivannnan, Ameer and Kolaththoor Mani.

Her sudden decisions, reports and activities made even Karunanithy shocked. That was why, Karunanity too was drawn behind her decisions. Karunanithy too had to release reports in favour of Sri Lankan Tamils in competition with Jeyalalitha. Jeyalalitha made campaigns, aiming at the election in 2011, that she was going to send Indian army to Sri Lanka in order to safeguard the Sri Lankan Tamils who were undergoing hardships. She was able to secure numerous votes from the people of

Tamil Nadu in the election by her vigorous and highly sensitize speeches. She once told that she would engage herself in giving Sri Lankan Tamils Dual Citizenship if she became the Chief Minister in 2016. After winning the election and when she was alive she held a letter politics in this regard and she did not take any concrete decisions.

She told that she would urge the Central Government of India to provide permanent citizenship to all Sri Lankan Tamils who went to Tamil Nadu as refugees and have been living there for a long time since 1983. The more Jeyalalitha was contradicted with Colombo, the more she was appreciated by the Tamil National elements in Tamil Nadu and the supporters of Tamil Eelam at the same time. She was popularized as the icon AMMA which is inherently called in Tamil Nadu was found a place even in the minds of Sri Lankan Tamils by her activities later on. These were aimed at identifying Karunanithy as "Tamil traitor" and it had a hidden agenda of filling the votes' bank in the Legislative Council election which was to be held in 2011. She who had once told that she would arrest leader of the LTTE by sending the Indian army to Sri Lanka later told that she would safeguard Sri Lankan Tamils by sending the Indian army to Sri Lanka.

She raised her voice that India would support the resolution of Assembly of United Nations with regard to the violation of human rights in Sri Lanka during the final phase of the war in Sri Lanka and the accusations of the violation of humanitarian laws by the Sri Lankan Government. She pressurized Delhi that India should support the resolution passed in Geneva by America. As a result, Karunanithy too had to issue similar reports in response. When Jeyalalitha boycotted the visit of Indian Parliamentary group to Sri Lanka, D.M.K told that their Parliamentarians too would boycott their visit to Sri Lanka. Jeyalalitha from time to time requested the Central Government of India to provide them with opportunities to live freely with absolute sovereignty. It can be seen that generally the Sri Lankan Tamils affairs have positive and negative aspects of the two major political parties of Tamil Nadu since 1980. In this connection, the Sri Lankan Tamils affairs have been the unwritten theory of the politics of Tamil Nadu Dravida Iyakkam till now. (Thanapalasingham, 2016). Although Karunanithy and Jeyalalitha followed two different policies with regard to Sri Lankan Tamils affairs, both of them were compelled to follow the policies in favour of Sri Lankan Tamils affairs at a certain stage.

Jeyalalitha took several decisions in favour of Sri Lankan Tamils during the final phase of the war and secured the biggest support of the people of Tamil Eelam and Tamil Nadu. She met the Tamil Nadu Legislative Council session and requested to impose an economical ban against the Government of Sri Lanka in consideration of the problems faced by Sri Lankan Tamils. She made a resolution the Logshaba in 2013 that there must be a referendum for the separate Tamil Eelam. Behind the opposition expressed that India should not participate at the Commonwealth Conference in Colombo in 2013, the then Indian Prime Minister Manmogan Singh had to give up his visit to Colombo at the eleventh hour. Jeyalalitha was the one who drew the attention of all the Tamils in the world towards herself by making a resolution that

India should act against the effort by America to withdraw resolution about human rights on Sri Lanka by United Nations in 2015 ('Jeyalalitha' 2016).

There is an opinion that after the death of Rajiv Ghandi, the status of whole India in terms of Sri Lankan Tamils affairs was different. In this scenario, the assassination of Rajiv Ghandi was condemned by Jeyalalitha and she who openly told that those who were involved in the assassination should be punished later expressed her opinion in favour of the accused and for their release in 2011. She also told that she would recommend general amnesty to those who were involved in the murder, met some of the relatives of the accused and consoled them. She who told that those who were involved in killing Rajiv Ghandi should severely be punished later told that she was ready to grant them a general amnesty.

As far as the Rajya sabha election of Tamil Nadu held in 2016, there were chances of winning for Karunanithy till the last hour. Nobody came consecutively for the second term as the Chief Minister in Tamil Nadu after M.G.R. and everybody's expectation was that D.M.K would capture the power. Some of the opinion polls expressed views that such victory would never be a landslide one. So, there was a need for Jeyalalitha to break it. She also had the necessity to win the election as she wanted to exonerate herself from the cases of corruptions. At this juncture, although the Sri Lankan Tamils problems are brought to an end, the people of Tamil Nadu wanted to give pressure to Sri Lankan government considering the welfare of the Sri Lankan Tamils. Jeyalalitha was compelled to release reports and make decisions in a bid to win the support of the people of Tamil Nadu in the election.

As Karunanity joined Congress during the final phase of the war and Jeyalalitha accused Krunanithy of enjoying the destructions. This kind of propaganda favoured Jeyalalitha in winning the election. . In this background, she requested the people of Tamil Nadu to vote for A.I. A.D.M.K for the establishment of Tamil Eelam in Sri Lanka at the Parliamentary election campaign in Erodu. She told that if the Central Government favourable to her is formed, she would do it and whereby she obtained the collaboration of most of the Eelam supporters and most of the votes. Finally she won the election. There are some information that LTTE were engaged in getting the support of Jeyalalitha during the final phase of the war. The internet released some of the letters that the LTTE had sent to Jeyalalitha. All these letters were sent to Jeyalalitha two months prior to the end of the war (Yatheenthira, 2016). Generally, the Sri Lankan Tamils affairs have been used during the Legislative Council elections and Local Government elections held in Tamil Nadu as a key instrument both to capture and topple the power. During the last Legislative Council election held in Tamil Nadu state in 1991, the strategy that Jeyalalitha applied was the anti LTTE policy and the restriction on the Sri Lankan Tamils in order to win the election. In the wake of the death of Rajive Ghandi, most of the people of Tamil Nadu wanted Jeyalalitha to form a Government. On the contrary to it, she made her election campaigns giving preference to LTTE support and the sympathy on the Sri Lankan Tamils.

The reason for it was that there were a lot of sympathies on the Sri Lankan Tamils in Tamil Nadu after the final phase of the war. Jeyalalitha was the one who led her politics knowing the pulse of the people. Even when she met Ranil Wickramasinghe and Chandrika Kumaratunghe who were the Prime Ministers of Sri Lanka at the times of the negotiations held between the Government of Sri Lanka and the LTTE in 2002, she did not meet Sri Lankan Tamil leaders in this connection. Jeyalalitha's actions and decisions were appreciable as a result of her last minute attitudinal changes. Although they had hidden political motives, it created a confidence and trust among the Sri Lankan Tamils that there was a leader in Tamil Nadu to raise voice for the Tamils. She told in the Lok Sabha that what happened in Sri Lanka was a genocide. She met the Indian Prime Minister Narendra Modi on 14th June 2015 and urged him to take action against the Government of Sri Lanka. She defined the forces as accused. She banned the Sri Lankan sportsmen to enter Tamil Nadu. She pressurized for the international investigation. Above all, She was very strong in recapturing Kachchathevu. She was considered as a leader who gave much trouble to the Sri Lankan Government in the critical and crucial situation. Today the Sri Lankan Tamils have lost a strong Tamil leader who can pressurize Delhi.

Jeyalalitha was recorded first in the history by replying to a Sri Lankan Tamil leader to the congratulatory letter sent by the former Chief Minister of Northern Province, C.V.Wickneswaran on her being elected as the Chief Minister of Tamil Nadu. In the letter she said that as the Chief Minister of Tamil Nadu she had taken all the necessary actions she could for the last 5 years to safeguard the welfare of Sri Lankan Tamils who have the navel cord relationship with the people of Tamil Nadu and for them to get justice. She also said in the letter that she would continue to take action for the Sri Lankan Tamils in the Eastern and Northern Provinces to get justice ('Jeyalalitha', 2016)

Conclusion

The above said three Tamil Nadu Leaders who were engaged in Sri Lankan Tamil affairs mentioned above are not alive today. M.G.R. and Jeyalalitha were from A. I. A.D.M.K and Karunanithy was from D.M.K. If it is looked into on the basis of a political party, Jeyalalitha did not follow the permanent policy of M.G.R. with regard to Sri Lankan Tamil affairs. She adopted a policy before 2009 May and another policy after that. As far as Karunanithy is concerned, although he was from another political party, he somewhat adopted M.G.R's policy with regard to Sri Lankan Tamils affairs. Although there were some fluctuations, there were not many changes. His silence during the final phase of the war in Sri Lanka has blunted all the efforts he had taken for the Sri Lankan Tamils for a long period of time. In this context, it can be observed that the first one had adopted a strong and permanent policy till the end; the second one had adopted somewhat unstable policy; the third

one adopted two different policies in two different periods with regard to Sri Lankan Tamil affairs. None can deny that except the first one, the second and third ones had a lot of political motives and factors in the policies they adopted with regard to Sri Lankan Tamil affairs.

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SOCIAL IMPACT ASSESSMENT OF ROAD WIDENING PROJECT IN MULLAITHIVU DISTRICT

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Abstract

Disaster sociology is the study of the relationship between man, culture and surroundings. It is mainly a trend, related to Society and Environment. Therefore it is an essential need to develop the infrastructure of Mullaithivu district and an important activity in relation to the long term development. For that, Social Impact Assessment and Environmental Impact Assessment are considered as important tasks. I collected the sample of Mullaithivu main road (A35) development programs. Here, two main roads are included. They are Mullaithivu-Mulliawallai Road and Mullaithivu- Puthukkudiyiruppu road. There are both main and secondary objectives in this study which can be listed as follows. The main objective of this study is to evaluate the social impact assessment and the secondary objective is to understand the positive and negative impacts on social, environmental and economic factors, due to the development of road particularly widening in the Mullaithivu District and to suggest some possible alternatives and to understand the challenges due to the widening of the road. This study is done within a short period, and the researchers have used the advanced data collection methods such as questionnaires and participation observation. It is better to follow the alternative methods to reduce the disadvantages of the project. This project is very important and policy makers should think that the project provides advantages rather than disadvantages . Therefore the project has to be welcomed by everyone who tries to develop the country through the development of the Northern Province.

Key words: Social Impact Assessment, Environmental Impact Assessment, Social impacts, Disaster, Road development, Road infrastructure projects, Cost Benefit Analysis.

Introduction

Disaster sociology is the study of the relationship between man, culture and surroundings. It is mainly focused on the present and past conditions, problems and trends related to society and Environment. The aim of this study is to examine the past and future consequences of widening the road system in the Mullaithivu district in the post war situation. The number of tourists coming to Jaffna is increasing day by day and people are returning to their homes from the welfare centers to the resettlement area. Therefore, it is an essential need to develop the infrastructure of the

Mullaithivu district. Until the end of the war, there was an allegation that the LTTE is the group that denied the development process in the North. But now there is a rare chance to develop the country including the North. The widening of the roads in Mullaithivu is considered as a part of the development in the whole country. All the roads are damaged or are being damaged by the use of heavy vehicles. Therefore it is an important activity developing the road with the long term development and Social Impact Assessment (SIA) and Environmental Impact Assessment (EIA) are considered as important tasks.

Study area

This study covers the area of Mullaithivu Land Area (2516.9 sq.km). The study area is large. This area includes Six DS divisions. I collected the sample of Paranthan - Karachchi - Mullaithivu main road (A35) development program. The government handed over the responsibility to China to widen the roads. Under this plan, two main roads are included: Mullaithivu- Mulliawallai Road and Mullaithivu- Puthukkudiyiruppu road. In Mullaithivu, most of the people are Tamils and Hindus by religion. But Christians and a few Muslims are also there. Most of the people, (about 95%) are Tamil speaking people and the other 5% constitutes forces and police personnel.(Statistical Report 2017, Northern Provincial Council). The study area mostly concerns the public. (Mullaithivu area was heavily affected by the war). After the end of the civil war, it is going to be developed by the government with the assistance of China and India. China is responsible for the road development project in Mullaithivu. Under this project the infra structures of the Mullaithivu district will get developed.

Literature survey

There are only a few studies carried out on the transportation system in Sri Lanka and it is a very rare topic in relation to Jaffna district. Because the development scheme comes to Jaffna after about 35 years. As such, it is important to look at this development process with SIA and EIA. Since our task is about SIA, we are going to have concern on the Jaffna district. For this purpose we obtained information from some of the previous studies to carry out analysis of our data successfully.

The experience gained by the researchers through direct observation in the road widening projects in Jaffna after the end of the civil war was helpful, too. Additionally some newspapers and the previous studies also helped the researchers in dealing with such topic related to development of the road. In this way, following literature sources can be listed.

In the article, "Let us prevent air pollution caused by vehicles" by Central Environment Authority, (1998), Environmental Promotion Division has given a clear idea of air pollution and its impact to the environment as well as the society. And also they have come across with possible solutions to minimize air pollution caused by vehicles under the transportation system.

In the article by Nirali Shukla & H.J.Jani, (2018), Social Impact Assessment (SIA) is defined as an effect (both positive and negative) on a social issue resulting from infrastructure development projects (UNESCAP, 2001). Another study was carried out by Central Environment Authority, (1999) "Man and Environment". This book describes the relationship between man and Environment and the impact of human behavior on the environment. As such, this book gives us a clear picture on interrelationship between man and environment.

The article by Chandrasekhar, J.W, (1996), Transport and Environment illustrates the present condition of transportation system in Sri Lanka and also describes how transportation system impacts negatively on the environment (Noise pollution, Air pollution, Traffic congestion)

The article by Kumarage, A, (2002), entitled "Urban Traffic Congestion: The problem and its solution" has come up with the problems under the urban traffic congestion in Sri Lanka particularly in cities such as Colombo, Kandy and Gampaha. And also they commented long term and short term strategies as solution for the urban traffic congestion. These are the previous studies we used to come up with good descriptive analysis regarding social and environment problems in Kandy – Peradeniya transportation system. Furthermore, Newspaper articles, specially those from newspapers which were published in Jaffna as local newspapers such as Uthayan, Valampuri and Thinakkural were used.

Problem of the study

This study is conducted in order to evaluate the social impacts assessment in the project of road widening in the Mullaithivu district. It is carried out as a research in disaster sociology. The topic was selected with the idea that all the development process need social impact as well as disaster impact assessment.

But at the beginning of the project, there were so many criticisms from various groups of people in Mullaithivu . They are both negative and positive beneficiaries. If there is an argument regarding a development process that should be mentioned by the development team.

There are the problems that this project has direct and indirect impacts on the socio, cultural and disaster aspects. Thus the issues are increasing day by day as a result of the side effects of the project. Temples, hospitals, schools, private tuitions, homes and all the material social factors on both sides of the road have to be removed. These social changes can have an important effect on the cultural disorganization as well as social crimes. Therefore, it is important to avoid the strong negative impacts. This is the main problem of the study. This study covers the socio, economic, disaster, social and health problems. All these problems are interconnected to each other with the road development. That is, the positive

impacts can change to negative impacts or set backs in the future for example if the road is developed. Then, the transportation of the vehicles will also increase and it may produce Carbon Dioxide (CO_2) in the atmosphere. This causes various environmental as well as social and health issues.

Significance of the study

Many social and environmental impacts under transport system have become a tremendous issue at present in our society. Therefore, we have to pay more attention to the following issues such as conflict between development and society, urban traffic congestion, air pollution, noise pollution, public condense which have been serious issues especially in urban cities such as Colombo, Kandy, Gampaha, Jaffna and Mullaithivu. Therefore, our study area has become one of the special area regarding the above issues. Due to the development of the Mullaithivu district after the post war era, there is a tendency of increasing the above issues. Considering transport issue, it was hard to find previous studies regarding transportation system in the above area. As such, this research focuses a close observational study on Paranthan – Puthukkudiyiruppu road which is on the progress of widening and development. Any development process definitely needs both social and disaster impact assessment. In this way, through identifying the social challenges, the study states the advantages and disadvantages of the objective. Therefore, the significance of the study is that finding solution for the disadvantage groups and providing the techniques for the development process to be efficient and sustainable.

Objectives of the study

The objectives of the study can be listed as follows. There are both main and secondary objectives in this study.

- Main objective

    To evaluate the social impact assessment

- Secondary objectives

    To understand the positive and negative impacts of social and Economic activities and disaster management, due to the development of road widening in the Mullaithivu District

    To understand the challenges due to the widening of the road and to suggest some possible alternatives

Methodology

Research methodology is listed below.
- Primary data collection method

    The primary data were collected through the following ways

- Focus group discussion

  It was conducted with the undergraduate students who represent the Jaffna district and the study area.

- Direct observation

  Observation and Consultation with organizations and institutions

  Observation and Consultation with members of the public

- Secondary data collection methods

  Literature review and study of background documents

  local newspapers

  Websites and

  Statistics information from the Road Development Authority (RDA)

The information from the secondary sources is colleced. In this way, the articles appeared in the newspapers and on the websites. The local newspapers such as UTHAYAN, VALAMPURY and YARL THINAKKURAL in the Northern Province were helpful in this regard. Additionally, the websites which published the information regarding the road development process in Mullaithivu were also consulted.

Introduction to SIA (What is Social Impact Assessment?)

Social impact assessment (SIA) is a sub-field of the Social Sciences that is developing a knowledge base to provide a systematic appraisal in advance of the impacts on the day-to-day quality of life of persons and communities whose environment is affected by a proposed project, plan or policy change.

Social impacts (also effects and consequences) refer to changes to individuals and communities due to a proposed action that alters the day-to-day conditions in which people live, work, play, relate to one another, organize to meet their needs and generally cope as members of society.

Why is Social Impact Assessment important?

Social impact assessment is adopted to help individuals, communities, as well as government and private sector organizations to understand and be able to anticipate the possible social consequences on human populations and communities of proposed project development or policy changes.

When is Social Impact Assessment done?

Social Impact Assessment (SIA) is done as part of the planning process and therefore

alerts the planner and the project proponent (through the social assessor) to the likelihood of social impacts. Like a biological, physical, or economic impact—social impacts have to be pointed out and measured in order to be understood and communicated to the impacted population and decision-makers. Social impact assessment provides a realistic appraisal of possible social ramifications and suggestions for project alternatives and possible mitigation measures.

What are the reasons for widening the roads?

It is a common question usually asked before doing a social impact assessment. The development of the road is considered as very important in the present context. When the situation is peaceful, usually the development activities also take place.

It is important to understand the benefits or the valid reasons for the widening of the roads in the Jaffna district. There are various reasons for the development activities. All these activities are considered quite important. Through analyzing the present conditions of the road, the following factors can be identified as the main reasons which lead to widen the roads.

- To reduce the accidents

- The population rapidly increased

- Transport vehicles increased

- It is easy to use the road route to export and import goods rather than using the sea route

- All the roads in Jaffna are bumpy

- No road development activities were done in the last 35 – 40 years due to the civil war

- It is said that the roads are the main cause for the accidents in Jaffna and the mistakes by the drivers

- Deaths and the disabling of people are due to the increasing accidents

- In case of emergency situation, it is difficult to rush to the spot since the roads are not properly constructed recently.

- Due to the ups and downs on roads, damages to vehicles are increasing.

- Tyres of the vehicles need to be renewed or changed often.

- Poor owners of the vehicles or the drivers spend more money for the repairs.

- Patients face difficulties while travelling.

- No check points, so drivers increase the speed to save time.

- Bus services from Jaffna to other parts of the country rapidly increased

It is an important thing to develop the roads and the drainage systems according to the neo urbanization. In the earlier period, there were small sized vehicles. But in the modern period, there are large vehicles and their uses are increasing. So the width of the roads should be changed according to the traffic problems of modern vehicles.

Advantages of the project

This report presents the findings and conclusions of the social impact assessment. This proposed road helps to reduce vehicular operation within the Mullaithivu district and reduces considerable travel time via the main roads which are going to be widened. Moreover, this project will also provide short term employment opportunity by engaging the rural poor people in the upgrading of the road. Such people based development efforts will reinstall economic activities in the area by creating long term employment and other opportunities. In the post war situation, the number of tourists coming to Mullaithivu is increasing day by day, people are returning to their homes from the welfare centers to the resettlement area. Therefore, it is an essential requirement to develop the infrastructure of Mullaithivu district. Until the end of the war, there was an argument that LTTE was the group that denied the development process in the north. But even now there are few chances to develop the country including the North. The widening of the road in Jaffna is considered as a part of the development in the whole country. The widening of the road doesn't solve only the transport crisis; there are various other advantages that can be identified. For example:
- Economic development

- Improvement of the quality of the life

- Communication and the infrastructure

- Development of the Commercial activities

Road route and the sea route

In the present situation, Mullaithivu roads are not in good condition. The government has to spend more money for the shipping to convey the goods. But it is said that using large containers is the easy way to reduce the expenditure of the transport. If Goods have to be transported by such large containers, it is essential to develop the roads in Mullaithivu.

Heavy vehicles and the road development

The containers can't move from the town to other local area. If the containers and other large vehicles have to move to other area, they have to face the "short bend road" very often. In this situation there is another issue, that is, because of these containers and the vehicles, overtaking of the vehicles from behind or giving way for other vehicles becomes very difficult. And there is another argument that the roads in Mullaithivu are not usable by large vehicles. All the roads are damaged or are

being damaged by using such heavy vehicles. Therefore, it is important to develop the roads for the long term development.

Saving times

When people build walls around the boundary of the land, they should be concerned about the future development; planting tree also have to be mentioned. If a tree is planted without long term consideration it may have to be cut down in future. First an appropriate place has to be selected to plant. If actions are taken such away negative effects of the development process will be reduced when the project of widening the road is implemented. If the people oppose the widening of the road, definitely the government will postpone the plan. Because when the government decided to widen the road with modern facilities in 1980 the people did not accept. As a result the government diverted the funds to another district. Therefore we have to be concerned on the development and the opportunity.

Development of the linkages infrastructure

When the roads are widened and developed there will be good transport service. Many institutions and firms will establish the buildings and develop their services in competition. As a result, the price of the land will increase in many folds. Therefore, the land owners can rent the land or sell the land at higher price than now. So the people can get benefits. Additionally the infrastructure will be improved automatically in a gradual manner. All these are the benefits for the people.

Income generation sources and pattern

Agriculture is the major income generation economic activity in Mullaithivu. Therefore, development of agricultural sector needs strengthening linkages to develop markets and it will substantially depend on the condition of the road network. A special social welfare program called "Samurdhi" has been operated and it covered all Grama Niladhari divisions in all DS Divisions. The Samurdhi beneficiaries are engaged in self-employment or self-income generation activities.

Role of Road Development Authority RDA

Even though the Road Development Authority (RDA) does not provide the compensation, they provide the materials for their construction activities. If they wish to follow the system of compensation, people have to give 15 to 20 feet land from both sides of the road. From the Centre of the road 50 feet becomes the property of the road development authority. If they continue with the compensation system, approximately 90% of the beneficiaries will have to lose their whole house with the land. Therefore, the RDA chief authority says that it is better not to follow the compensation system.

There were cottages in Singapore before development. When the government decided to develop the country the people opposed the plan. Because the people thought that their houses (cottages) would be destroyed. But the government did not give up the plan and continued the scheme. That is the reason for the development of Singapore. Therefore, the people have to understand the development process.

Disadvantages of the project

Due to the widening of the roads in Mullaithivu the reactions of the people can be both negative and positive. It is said that the cultural identities, the heritage properties and so many other important resources will be destroyed again after the civil war. In this way the SIA (Social Impact Assessment) is important in the project of the road development.

  - Cutting trees and its effects in the society

A large number of trees which are many centuries old are cut down by the Road Development Authority. They do not consider the side effects of the activities. In this matter, as environmental sociologists the side effects have to be mentioned. On the sides of the Mullaithivu- Mulliyawalai road, so many trees are disappearing due to the road widening project under the construction scheme of India. It is said that, before cutting the trees which are on both sides of the roads, they have to evaluate the positive and negative impacts on society. That is carrying out social impact assessment is essential.When social impact assessment is considered environmental awareness should be mentioned also. In this context, cutting trees may produce negative impacts on people, animals and birds. They are not concerned about the bio diversity. Here the alternative ways should be considered. Nobody can say that these trees are not useful to the community or environment. In the evaluation following things should be mentioned by the development team which is responsible for the construction.

  - Rapid negative social change

When the road widening and development projects are implemented rapid social changes will occur. It has been started with the starting point of the widening roads. When widening the roads, houses, walls, shops, supermarkets, temples, gardens, paddy fields, hospitals, schools, banks, fuel stations and so many institutions will undergo some kind of changes. But the activity of widening road must have certain planned social change. Therefore, before doing a development project, the development team has to consider these institutions and the people. Poor people can not rebuild their houses, walls, or even a small corner shop.

  - Reactions of the people

As the development team and the labourers destroy the walls, buildings, statues, shops which are closer to the road. People refuse this development process. All the development processes have a policy on compensation. But here the owners of the houses or other properties are not provided with compensation for their properties lost.

- The role of compensation

This development project covers 4 – 5 feet on both sides of the roads. People have to donate the land to the road widening. But some people say that they are poor. There is no way to earn money. Only land was their property but now all are destroyed. They ask where they could go if they cut down their coconut trees and other usable trees. So here the compensation should be mentioned. People lose their land but for that they have to be paid. Unfortunately no compensation is provided for the affected beneficiaries.

- Economic conditions of the people due to the project

A poor woman says, "We don't have any permanent occupation. We are poor, facing difficulties due to the economic hardship. We had a mini shop to earn something within our premises. Because our well is behind the house, and the kitchen and other main hall are near the road. If we have to give such amount of land, definitely we will have to move to another place. How can we go to another place? We are often pressed to sign on that agreement. Another case from Vattappalai says, "Our GS came to our home and said that if only you agree to give the land,we can give the resources to build a new wall behind 7m from the present place. Otherwise we cannot give any resources. But RDA will come and destroy your wall. After that we will never give the resources to build. So immediately we signed." In this case, the situation of the negative beneficiary is to be mentioned. Here the RDA or the Government will not provide the compensation. According to the project, they are not going to give money for the difficulties. But they agree only to give materials such as stone, cement, and sand. It should be mentioned that people have to give the land without payment. They have to give the coolie (wage) for the workers to build their wall. The land is lost unreasonably and the people do not wish to have development.

- Potential behavior of the people

The agreement letter does not bear any other information in details regarding compensation. So people think that they are going to be deceived by the government. In that case it is sure that people will go against the government. And they may be engaged in unwanted activities. People think that these kinds of activities are not a proper step in the development process.Through this plan, a large number of the trees are going to be cut down. As a result, the Carbon Dioxide (CO2) will increase in the future. Roads will be covered with dust from the vehicles because all the trees on both sides of the roads are cut down. As a result, the land becomes barren. The wind will bring a lot of dust to the roads and the houses which are near the roads.

- Development project in other parts of the country

Negative beneficiaries were provided with compensation in Colombo, Kandy and many other places in the country. As the people who lose their land are very poor, it is also important to note that the compensation is essential for the people.

But here an incident from the road widening project in "Kaaththaankudy" in Batticaloa can be mentioned. There was a road development project carried out

recently. The government did not provide compensation for the losers of the land. Instead of that, the government provided cement and other materials to build the wall and the damaged buildings. The government followed a strategy that first the wall of a UC member's house was destroyed. Then, the people agreed to donate their land for the development of the land. The contractor may use strategies like this in widening the roads in Mullaithivu.

Unidentified factors and the recommendations

According to this case, a development process does not have the positive way. Before doing this, the following things have to be considered. The residents of the area are the people who are going to undergo both positive and negative benefits of the project. Probably people do not like to get benefits by losing their important things such as land, house, shops etc. Therefore, the following things need to be identified in the project:

Volunteers and non-volunteers to give land, the needed land, numbers of the trees, family background of the people, amount of compensation, destroying bus stops, impacts on local labors, results of the ineffective planning, solid waste from construction materials and disposal of trash, extraction, transportation and storage of construction materials, impacts on local road net work, soil erosion, effect on water quality, natural flow paths and existing drainage reduce the impact.

All mitigation measures and environmental safeguards are specified in the EMP which is included in contract documentation in order to prepare the contractor's Environmental Management Action Plan (EMAP)): impacts on water resources, air quality, noise and vibration, impacts on flora and fauna, impacts due to traffic, personal safety, air quality and noise.

Conclusion

Any development process definitely needs both social and disaster impact assessment. The study was done to identify the advantages and disadvantages of the project. There are direct and indirect impacts on the socio, cultural and environmental aspects in this project. The issues are increasing day by day as a result of the side effects of the project. Temples, hospitals, schools, private tuition centeres and homes on both sides of the road have to be removed. These social changes can have an important effects like cultural disintegration and lead to social crimes. Therefore, it is important to avoid the strong negative impacts.

The authority should mention the alternative ways in the widening of the roads in Mullaithivu. Due to the widening of the roads in Mullaithivu, the reactions of the people should be both negative and positive. It is said that the cultural identities, the heritage properties and so many other important resources will be destroyed again after the civil war. In this way the SIA (Social Impact Assessment) is important in the project of the road development.

Since the road widening and development projects are implemented rapid social changes will occur. They started with the widening of roads. When they widen the roads, houses, walls, shops, supermarkets, temples, gardens, paddy fields, hospitals, schools, banks, fuel stations and so many institutions have to face changes. But widening of roads must have certain planned social changes. Because before doing a development project, the development team has to consider these institutions and the people.

Finally, it is advisable to follow the alternative methods to reduce the disadvantages of the project. This project is very important. But policy makers should think that the project provides benefits rather than inconveniences. Therefore, the project has to be welcomed by everyone who tries to develop the country through the development of the North.

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