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An Overview of Agricultural Degradation in Nepal and its Impact on Economy and Environment

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Abstract

This paper is a review of agricultural degradation and its impacts on economy and environment in Nepal. It includes an overview of agriculture in Nepal and the changes that have taken place. This paper has basically been applied descriptive cum analytical research design to complete. Agricultural development has been sluggish, and has failed to keep pace with population growth. In recent years the yields of major food crops in Nepal have been lower than other South Asian countries and Nepal is now dependent on food imports. Land holding size per family and field sizes has both decreased markedly during recent years. If hill regions are considered independently, all cereal crops yields have stagnated in the last 30 years and gains in production that have been made. Crop productivity in the hills has declined due to land degradation. Of the 28% of Nepal land that is degraded, 10% is poorly managed sloping agriculture terraces. As yields and production of cereal crops have fallen, many farmers have shifted to growing cash crops, to meet the demands of the increasing urban population and government agricultural policies have encouraged to farm. Nepal's livestock population is one of the highest in Asia and nearly every rural household keeps domestic animals resulting in widespread and serious problems of livestock overgrazing. Changes in agricultural practices (including changes in crops and crop production, impacts of livestock overgrazing) are having major and far-reaching impacts on natural environment.

Keywords: Agriculture, farming, environment, conservation, impact, degradation

1. Introduction

Agricultural development has emerged as a major subject of development discourse in livelihood improvement and environment degradation in Asia. Shifting cultivation,

the first stage of agricultural development was the most widespread agricultural system in South and Southeast Asia until the mid-20th century. It involved basic tools and techniques low level of inputs and subsistence level of production and consumption which was unable to support growing population and their subsistence needs. The food security situation was worse in developing countries where the colonial power invested very little on food production systems. After independence, their situations were much worse. The increasing population¹ combined with government control over common property resources was putting pressure on shifting cultivators to reduce the fallow period. Meantime, shifting cultivators deserve improved lifestyle which was not possible from the low return being provided by their practice of cultivation. Such circumstances forced farmers to seek for more productive agricultural system which otherwise could have brought a hunger and malnutrition situations in Asia.

Nowadays in Nepal, the heavy use of chemical fertilizers and pollutant technologies, the most common farmlands are degraded. These advances including high yielding varieties, more use of chemical fertilizers, haphazard irrigation and other chemical inputs led to a remarkable environmental degradation. The increasing number of livestock and overgrazing over the pasture lands has created environmental deterioration. Growing population has challenged to produce more but because of the traditional production system production has not been increased rather it has been degraded the environment and recorded loss on economy.

2. Review of Related Literature

Contribution of agriculture sector to Gross Domestic Product (GDP) during the people's movement-II in 2005/06 was close to 35 percent. Though various programs were implemented to increase agricultural production in subsequent years, the contribution of this sector to GDP just remained between 32 percent and 36 percent. As per the preliminary estimates, contribution of agriculture to GDP during the current fiscal year 2011/12 will be 35.68 percent against the revised estimate of 37.47 percent in the previous fiscal year. In the current fiscal year, GDP is expected to rise by 4.56 percent at constant prices of FY 2000/01, while the growth rate of agriculture sector is expected to remain slightly higher than this with 4.93 percent. Agricultural production in this fiscal year is estimated to increase marginally higher by 0.46 percent than that of the previous fiscal year (Economic Survey, 2012).

Agricultural sector may be detrimental for environment in many ways. In fact, the growing demand for agricultural products, the increasing domestic food production by fewer individuals because of rural exodus, and the need of nontraditional export products as a means of increasing income, and earning valuable foreign currency for the country lead farmers to look for alternative agricultural methods in order to raise their productivity (Andreatta, 1998). One way to address this problem is the excessive

¹According to National Population Census, 2011 Nepal's population is 2,64,94,504 and population growth rate is 1.35

use of fertilizer and pesticides, and this has adverse effects in terms of environmental degradation. Fertilizers and pesticides are discharged into the ecosystem by drifting, dripping or leaking into areas surrounding the target area. The deposited chemical is then transformed by living systems, heat, light and water to form a pesticide residue (Ghatak & Turner, 1978, pp. 137).

Another important issue regarding the environmental degradation effect of raw agricultural product exports is the comparison of the environmental impacts of primary production and processing (Hecht, 1997).

These residues are dispersed in the ecosystem through natural forces (biologically, physically), and human activities. They can be transported by fluid movements (wind, rain, etc.) in the environment. They can vaporize from falling spray particles and from plant, soil and water surfaces; they can be carried physically as vapor or absorbed in wind-borne particles of soil and dust. Thus, the use of these products in addition to animal feedlots, pastures, dairy farming and aquaculture leads agriculture to provoke soil and water pollution through the discharge of pollutants and residue (phosphorus, nitrogen, metals, pathogens, sediment, pesticides, biological oxygen demand, trace elements) to the soil as well as surface and groundwater, through net loss of soil by poor agricultural practices, and salinization. Agriculture is also responsible for a large amount of methane emission (second most important greenhouse gas) and nitrous oxide emission (third most important greenhouse gas) (Galt, 2008).

Another way to address the problem of high agricultural product demand is the excessive use of water through irrigation, the use of mechanized agricultural methods rather than labor intensive practices and/or extensive use of land. These methods affect physical environment respectively through water shortage, air pollution (CO₂ emission) and deforestation. Agriculture is the single largest user of freshwater resources, using a global average of 70% of all surface water supplies according to Ongley, (1996).

In the specific case of agricultural subsector, some arguments have been developed linking international trade to environmental concerns. The scale, technique and composition effects have been discussed for this sector since agricultural product export obviously leads to economic growth (Antle, 1993). Trade liberalization also modifies the relative price of agricultural inputs such as fertilizer, pesticide, tractors, and thus, has adverse impact on the physical environment. Given that developing countries generally import these inputs, openness to trade leads to pollution haven in agricultural subsector. Because of data scarcity, few studies investigated empirically this hypothesis. Through econometric estimation and simulation, Williams and Shumway, (2000) found that the North American Free Trade Agreement (NAFTA) is expected to increase chemical usage substantially in the United States and lead to greater groundwater contamination. They also showed that in Mexico, the expected effects are a substantial increase in fertilizer use but a decrease in pesticide use.

In the areas of semi-commercialized agriculture, farmers are injudiciously using various pesticides for an increased productivity and risk mitigation in crop production, even though an average application rate of 142 g/ha (Adhikari, 2002) and annual consumption of 176mt a.i. (Palikhe, 2002) of pesticides in Nepal is not considered high. According to Palikhe (2006), more than 60% of the applied pesticide remains in

the soil materials polluting soil environment as a risk to terrestrial as well as aquatic biosphere. The residual effects of some of the chlorinated hydrocarbons like Chlorodane, BHC, DDT and aldrin remain in soil for a period of more than nine years (DOA, 2001). Imprudent disposal of obsolete pesticides is also of serious concern as a considerable quantity of persistent organic pollutants (POPs) stored indifferent warehouses would be detrimental to the prevailing ecosystem in the locality.

Average application rate of fertilizers in Nepal is relatively low. It is estimated in Nepalese situation that a general pattern of major cereals removed 310kg of plant nutrients from soil annually on a hectare basis. Since, on an average, only 29 kg of plant nutrients per hectare is added to soil through various fertilizers, net loss of plant nutrients from the inherent fertility reserve in the soil alarming (MOAC, 2007).

Likewise, various types of agricultural operations and hazardous effluents from agro-industries and processing plants, slaughter houses and veterinary hospitals and clinics, when not collected and disposed safely (Haung, 2004), are subject to water, air and land pollution in the country. Despite being the second richest country in water resources in the world, chronic shortages of water at various places of the country is a common problem.

Farming with no or low use of agrochemicals becomes a strategic destination towards achieving sustainable development of Nepalese agri-businesses. Such would help to create low carbon economy in the country. Promotion of alternative energy sources like biogas, improved cooking stoves and solar energy from photovoltaic system is important also in achieving environment friendly agriculture development. The Alternative Energy Promotion Centre has been working on such promotions through a twenty-year master plan to reduce pressures on forest resources mainly due to fuel wood supply (G.C., 2003).

The issue of accelerated erosion was developed from a number of studies and impressionistic writings, which claimed that Nepal would slide away into Ganges by the year 2000 and that the Nepalese hill farmer was to blame for this situation (Biot, 1995:96).

Soil loss through surface erosion from the agricultural land in hills varies from less than 2 tons ha⁻¹year⁻¹ to highest soil loss of 105 tons ha⁻¹year⁻¹ (Acharya, 2007). Soil losses are found to be higher in Bari1 land on sloping terraces (32 tons/ha/year) than in Khet2 land (less than 1 ton/ha/year) which is directly related to slope gradient and it is cheaper to make sloping terraces than making level terraces (Shrestha, 2004). Thus, the frequent breaking and loosening of soil through regular hoeing and plough had forced soil to erosion. Soil degradation through nutrient depletion is also a serious issue (Lal, 2000). Many studies have shown that soils in mid-hills have very low nutrients especially nitrogen and phosphorous (Shah and Schreier, 1991). In particular, the double and triple annual cropping rotations are more nutrient demanding. Thus in order to fulfill nutrient requirements, increased number of crops per annum has increased the inputs of chemical fertilizers in their farm. As a consequence of increased fertilizer use during intensification process, soils in mid-hills are becoming more acidic (Westarp, 2004).

The intensification also leads to the deterioration of nearby water bodies like rivers. During the monsoon time, heavy rainfall takes away tons of soil with nutrients

from hills to the water bodies. It has been found that water bodies near to the intensification area have higher concentration of nitrogen, phosphorous and potassium. This is due to higher amount of chemical fertilizer use for intensive production of crops and the nutrients have been washed down (Dahal, 2007).

There are some evidences that the climate has been changing in Nepal. The temperature has been increased by 1.8oC during last 32 years and the average temperature increase was recorded as 0.06oC per year. The rainfall pattern is also experienced as inconsistent with higher intensities of rain and less number of rainy days (Malla, 2008). The emission of methane from rice field supplied with 50% nitrogen fertilizer was 49 kg per hectare which is quite high without irrigation facilities (Malla, 2006). The plains (Terai) of Nepal faced a problem of rain deficit during 2005 and 2006 due to early monsoon which reduced the crop production by 12.5% on national basis. Around 10% of the country's arable land was left fallow due to rain deficit where as there was flood in mid-western Terai, that decreased production by 30% in the same year (Rauniyar, 1998). Early maturity of the crops due to increasing temperature helps to increase the number of crops per year. But increasing number of crops lead to increase in agricultural activities like tilling and agro-inputs. This has potential implication on soil degradation and emission of greenhouse gases in the fragile landscape of mid-hill region.

3. Hypothesis

This paper is the review of agricultural degradation and its impacts on environment and economy. Nepal contains significant contribution of agriculture; the contribution of agriculture sector on GDP remains average 33 to 39 percent. More than two third population of the country has been depending upon the labor and production of agriculture sector. But in the recent years the per capita land holding has rapidly been reduced and the production system has been converted from organic to chemical, most of the ignorant farmers of remote rural areas are using chemical fertilizers haphazardly, they don't know either their land has needed particular fertilizer or not. Having this background, this paper contains the following major hypotheses.

- There is inseparable relationship between agricultural degradation, economy and environment.
- Agricultural production has been reduced in comparison to population growth.
- The reduced agricultural production system has negatively contributed to the overall economy of the country.
- Existing agricultural production system has been degraded the quality of environment.

4. Overview of Nepalese Agricultural Production

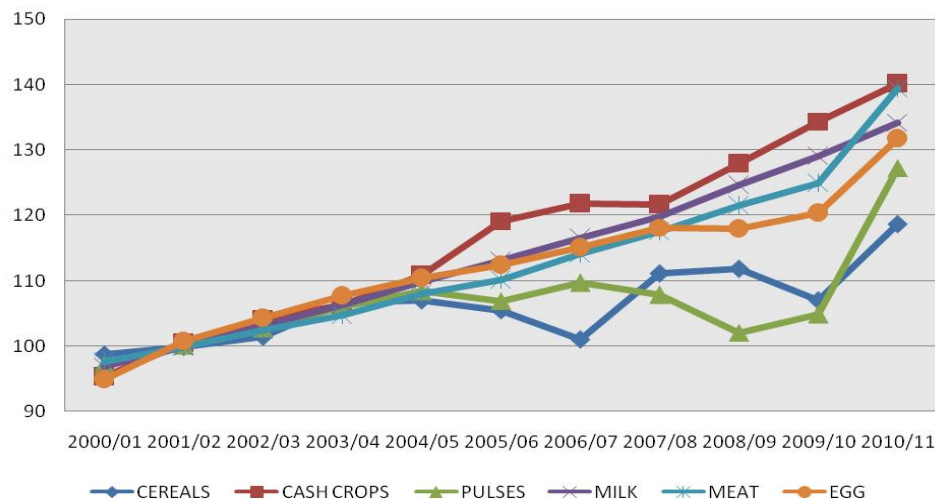


Figure 1: Index of Major Agricultural Production

Source: Statistical Information on Nepalese Agriculture, 2010/2011.

1. Total Area of the Nation (Sq. Km.)	147181
Mountain	51817
Hill	61345
Terai	34019
2. Land Use Statistics ('000 Ha.)	
Agricultural Land Cultivated	3091
Agricultural Land Uncultivated	1030
Forest (including shrub 1560)	5828
Grass Land and Pasture	1766
Water	383
Others	2620
3. GDP at current price (NRs. million), 2010/2011	1261210
Agricultural	449676
Non agriculture	811534
4. GDP at constant (2000/2001 prices) [NRs. million], 2010/2011	608111
Agricultural	212404
Non agriculture	395707
5. Population engaged in Agriculture 2001 (%)	65.6
6. Total Agricultural Holdings No., (2001/02)	3364139
7. Irrigated Area up to 2010/2011 (Ha.)	1254272

8. Area and Production of Cash Crops, 2010/2011

Crops	Area (ha.)	Production (mt.)	Yield (kg/ha)
Oilseed	213706	176186	824
Potato	182600	2508044	13735
Tobacco	1135	1238	1091
Sugarcane	62998	2718226	43148
Jute	10559	14418	1365
Cotton	135	135	1000

9. Area and Production of Pulses, 2010/2011

Crops	Area (ha.)	Production (mt.)	Yield (kg/ha.)
Lentil	207591	206869	997
Chick Pea	9124	8130	891
Pigeon Pea	17469	14107	808
Black Gram	27518	22530	819
Grass Pea	9213	8674	941
Horse Gram	7901	5808	735
Soyabean	293173	28318	966
Others	26248	23924	911
Total	334380	318362	952

10. Fruits

	Area (ha.)	Production (mt.)	Yield (kg/ha.)
Fruits	79184	794184	1003

11. Vegetables

	Area (ha.)	Production (mt.)	Yield (kg/ha.)
Vegetables	244102	3203563	13124

12. Tea	17438 Mt.
13. Coffee	402 Mt.
14. Chilli	27203 Mt.
15. Cardamom	12584 Mt.
16. Ginger	216289 Mt.
17. Garlic	39566 Mt.
18. Turmeric	35295 Mt.
19. Cocoon	26.10 Mt.
20. Honey	1365 Mt.

Table 1: Area, Production and Yield of Cereal Crops² in Nepal (Paddy, Maize and Millet)*(Area in Hectare, Production in Metric Ton and Yield in Kg. per Hectare)*

Year	Paddy			Maize			Millet		
	Area	Prod.	Yield	Area	Prod.	Yield	Area	Prod.	Yield
2000/01	1560044	4216465	2703	824525	1484112	1800	259888	282852	1088
2001/02	1516980	4164687	2745	825980	1510770	1829	258120	282570	1095
2002/03	1544660	4132500	2675	836190	1569140	1877	259130	282860	1092
2003/04	1559436	4455722	2857	834285	1590097	1906	258597	283378	1096
2004/05	1541729	4289827	2782	849892	1716042	2019	258839	289838	1120
2005/06	1549447	4209279	2717	850947	1734417	2038	261673	290936	1112
2006/07	1439525	3680838	2557	870401	1819925	2091	265160	284813	1074
2007/08	1549262	4299246	2775	870166	1878648	2159	265496	291098	1096
2008/09	1555940	4523693	2907	875428	1930669	2205	265889	292683	1101
2009/10	1481289	4023823	2716	875660	1855184	2119	268473	299523	1116
2010/11	1496476	4460278	2981	906253	2067522	2281	269820	302691	1122

Table 2: Buckwheat, Wheat and Barley*(Area in Hectare, Production in Metric Ton and Yield in Kg. per Hectare)*

Year	Buckwheat			Wheat			Barley		
	Area	Prod.	Yield	Area	Prod.	Yield	Area	Prod.	Yield
2000/01				641030	1157865	1806	28194	30488	1081
2001/02				667077	1258045	1886	27722	30790	1111
2002/03				669014	1344192	2009	27555	31711	1151
2003/04				664589	1387191	2087	27467	28151	1091
2004/05				675807	1442442	2134	26428	29341	1110
2005/06				672040	1394126	2074	26227	27786	1059
2006/07				702664	1515139	2156	26580	28293	1064
2007/08				706481	1572065	2225	26106	28082	1076
2008/09				694950	1343862	1934	25817	23224	900
2009/10				731131	1556539	2129	26600	27587	1037
2010/11	10304	8841	858	767499	1745811	2275	28461	30240	1063

Source: Statistical Information on Nepalese Agriculture, 2010/11

²In Nepal, cereal crops (paddy, millet, maize, wheat and buckwheat) are taken as the major food grains for the subsistence.

Semi traditional to early commercial agriculture³ system of Nepal has now its economic move in transition from agricultural to early industrial track of economic development. An attempt has been made to assess the relationship between the emerging modern agriculture practices and environmental depletion. Some of the developmental challenges of Nepal like small land holdings, weather dependent farming systems, low per capita income, underdeveloped physical infrastructures and inefficient bureaucratic procedures are associated with comparatively higher cost of agricultural production. Natural disasters and human induced environmental degradation are closely associated with improved farming systems. Nepal has preferential ways of producing niche agricultural products by exploiting its inherent diversified climate to cope with the global open market challenges. Competitive agribusinesses along with the adoption of environmental protection measures keeping the strategy of import substitution and export promotion are the ways for sustainable agriculture development in the country.

5. Land-Use Policy 2012

Of the total Nepal's land area, 27 percent is arable, forest covers 39.6 percent, pastures occupy 12 percent, 17.2 percent is covered by snow and rocks and the rest 2.6 percent is covered by water. Due to absence of land-use policy for the proper management of these lands, unplanned residential area and urbanization have continued to grow while the arable land is gradually diminishing. Similarly, the trend to occupy and leaving it barren has also increased while registration and encroachment of government and public lands by squatters have grown in the same way. Likewise, uncontrolled fragmentation of land that led to the decline of agricultural production and productivity consequently providing threat to food security. The National Land-Use Policy 2012 has been enforced as it became imperative to formulate and implement proper policy to get rid of these problems.

Special Features of Land-Use Policy:

Land has been classified into 7 categories on the basis of its use.

1. Agriculture Area
 2. Residential Area
 3. Commercial Area
 4. Industrial Area
 5. Forest Area
 6. Public Area
 7. Other Areas as specified based on necessity
- A Land-Use Council has been formed at the Centre on Chairmanship of Honourable Vice-Chairman of National Planning Commission comprising Secretary of concerned Ministries and Land-use experts for implementation of the Policy
 - Establish a permanent Department of Land-Use Management by permanently

³In Nepal, about 80 percent rural population practices non-commercial or traditional agricultural production system. Only urban and semi-urban areas practice the commercial and early commercial production practices respectively.

restructuring the existing National Land-Use Project under the Ministry of Land Reform Management so as to regularize monitoring and facilitating implementation of land use plan, and to develop basic infrastructure for preparing land use plans to bring the Policy into implementation. The Department will draw the human resource from Agriculture, Irrigation, Forestry, Environment, Housing, Urban Planning, Survey, and Land Management.

- A district level Land-Use Implementation Committee has been established under the Chairmanship of the District Development Committee (DDC) Chair with the representation of various office heads of the districts. Likewise, municipality and village level Land Use Implementation Committees have been established with the representation of office heads of the concerned villages and municipalities.
- Necessary statutory provisions will be developed within two years in order to bring policy into implementation.
- Monitoring and evaluation provisions and risks have also been incorporated in the policy.
- Policy will be reviewed and revised every ten years.
- Government of Nepal, and Ministry of Land Reform and Management has made the provision for the power for removal of road blocks if some problems or difficulties arise while implementing the policy.
- The definition, basis and standard set for specifying areas, details on organization structure and sectoral authority at central, district and local levels are provided in the annexes of the policy (Economic Survey, 2011/12).

6. Nepalese Agriculture and Economy

Agriculture sector plays a critical role in the Nepalese economy as this sector still contributes more than one third to Nepal's GDP, and more than two-third of its population depend on it for their employment and livelihood. Lack of adequate knowledge, skill, technology and entrepreneurship to transform the prevailing traditional farming to commercial farming system not only contained farmers to subsistence farming but also they are suffered by the under employment and disguised unemployment problems. Factors like easy access to irrigation facility on agricultural lands, improved seed and seedlings, chemical fertilizers, pesticides, agricultural loans, advance farming technology, and farmers' access to technology and knowledge play vital role in mitigating this problem and enhancing agricultural production. But according to statistics of the previous years, addition of irrigation facility, supply of agricultural credit, chemical fertilizers, improved seeds and seedlings has not been satisfactory. Due to severe fluctuations on availability of such inputs make farmers remain reluctant to take risk due to the uncertainty on the availability and accessibility of these inputs and this has direct impact on agricultural production.

6.1 Special Programs on Agriculture Sector

- a. Mission Program for Agricultural Production: Promotional programs for production of onions, maize, lemon, fish and oilseeds have been carried out with the objective of substituting imports of these products. These programs

were implemented in Sunsari, Sarlahi, Rautahat, Bara, Kavre, Chitwan, Nawalparasi, Rupandehi and Dang for Maize farming while, onion farming covered Saptari, Sarlahi, Siraha, Dhanusha, Bara, Parsa, Rupandehi, Banke and Bardia, districts, pisciculture covered Sunsari, Saptari, Bara, Parsa, Chitwan, Nawalparasi, Rupandehi, Banke and Bardia districts. Likewise, Sarlahi, Chitwan, Lamjung, Nawalparasi, Kapilbastu, Pyuthan, Dang, Surkhet, Banke and Bardia districts conducted oilseeds program while lemon farming program covered Terathum, Dhankuta Bhojpur and Makwanpur districts. These programs have transferred modern farming technology to the farmers thereby bringing positive impacts on the agriculture production and productivity.

- b. Cooperatives run Poultry and Pig Farming Program: This program, which was started from 4 districts in FY 2008/09 targeting Dalits, socially downtrodden and back-ward communities, janajatis, women, squatters, marginalized and bonded labourers and landless farmers, has now been extended to 26 districts including Kailali, Bardia, Banke, Dang, Saptari, Jhapa, Morang, Sarlahi, Udaypur, Ramechhap, Dhading, Sindhupalchowk, Syangja, Dolakha, Kavre, Dhanusha, Bhaktapur, Nawalparasi, Lamjung, Parwat, Sindhuli, Parsa, Makwanpur, Mahottari and Banglung. Such program has helped instil the sense of cooperative among the farmers associated with this program together with the rise in their incomes.
- c. One Village, One Product Program: One Village, One Product Program, based on the Public-Private Partnership approach, has made remarkable achievement after reaching the second phase with completion of 5 years of its execution. Under this program, betel nuts production in Jhapa, turmeric farming in Sunsari, ginger farming in Salyan and Palpa, rural agro-tourism scheme in Lamjung and Szechwan pepper farming in Myagdi are being conducted in the current fiscal year. Similarly, Jarailo and Basmati Chamal farming in Doti, banana farming in Chitwan and Kanchanpur, fish farming in Dhanusha and Mango farming in Saptari are also included in this program.

6.2 Status of Imports and Exports of Agro- Products

Exports of food items, live animals, tobacco and beverages according to Standard International Trade Classification (SITC) group had increased by 17.2 percent with a total worth of Rs. 10.5 billion in the first eight months of FY 2010/11 as compared to the corresponding period of its previous year. Export of such items during the corresponding period the current fiscal year is estimated to total Rs. 10.12 billion only with a decline of 3.58 percent as compared to the previous fiscal year. Food items and live animals worth Rs 14.54 billion and tobacco and beverages worth Rs 1.7 million were exported in the fiscal year 2010/11. Likewise, food items and live animals worth Rs 29.27 billion and tobacco and beverages worth Rs 2.17 billion were imported in FY 2010/11. In the first eight months of the previous FY 2010/11, food items, live animals, tobacco and beverages worth Rs. 20.49 billion were imported while imports of such commodities has increased by 30.38 percent and reached Rs 26.71 billion in the same period of current fiscal year. Likewise, in the first eight months of the

previous fiscal year 2011/12, beverages worth Rs. 1.42 billion were imported while Rs. 1.83 billion has increased in the imports of such item in the same period of the current fiscal year. During the review period, on agro-products (food, live animals, tobacco and beverages) side, last year's trade deficit of this group rose by 66 percent reaching Rs. 16.59 billion.

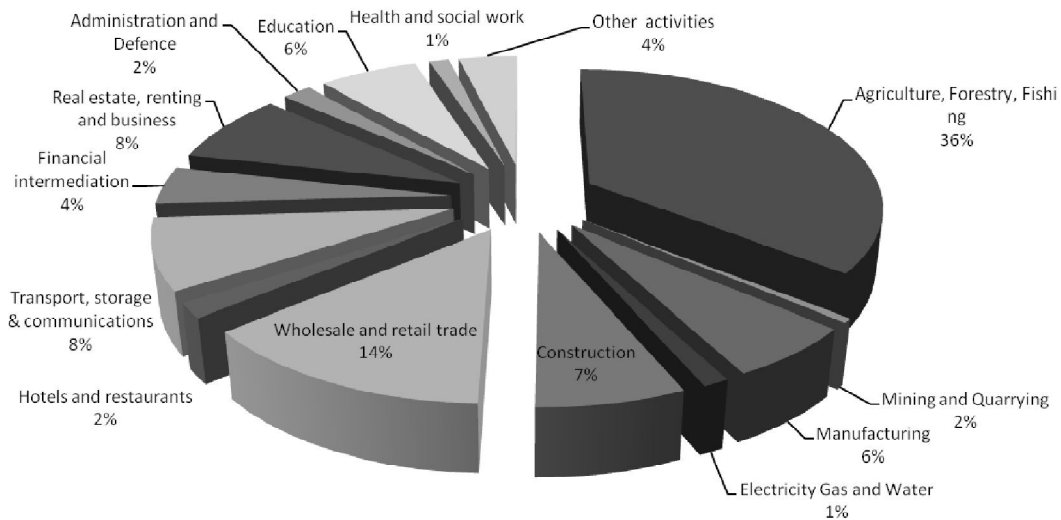


Figure 2: Percentage Contribution to GDP by Sectors

Source: *Statistical Information on Nepalese Agriculture, 2010/2011*.

7. Nepalese Agriculture and Environmental Degradation

Two third of Nepalese people are involved in farming business exploiting only 21% of cultivable land for their livelihood. Majority of the farm families are semi-literate or illiterate and scattered in rural settlements. An increase in population by 2.2% annually is producing additional labor force in the national labor market. Average size of land holding is small (0.5 ha) fragmented in scattered parcels of three thus limiting agriculture commercialization.

Forty five percent of the farmers, having less than 0.5 ha, share only 13% of total land (CBS, 2010). Owing to modern sophistications and ever-increasing population, meeting people's increasing and changing needs and aspirations, on one hand, is a major burden to the country. On the other, crop profitability (particularly on cereals) is declining due to aforementioned agri-business related challenges. The consequence is over exploitation of natural and land resources.

Such resulted in degradation of environment deeply connected with permanent loss, depletion or pollution of natural resources, adverse weather, changing microclimates and unbalanced situations in the components of inherent chain in the ecosystems. Excluding adverse physiographical, ecological, geological and meteorological factors resulting in common natural hazards such as floods,

earthquakes, droughts, cold and hot waves, hailstones, windstorm and cyclone, landslides, disease epidemics, glacial lake outburst flood (GLOF), avalanches, thunderbolt and fires, the environmental degradations are basically caused by human intervention in various aspects of modern technology adoptions. Ever increasing surplus labor forces are compelled in general to cultivate mountain slopes and other marginal lands in the country in meeting their employment and day-to-day basic needs.

The consequence of such practice in long run is land resources and environmental degradation. There is a high and increasing pressure on the forest area because of rapidly growing population and their dependence on fuel wood for major share (77%) of energy required. Besides, encroachment of forest area for cultivation and settlements and thus human induced landslides, floods and water erosion have resulted in massive depletion of forest and agricultural land. The annual deforestation rate is highest in Nepal (1.8%) among the South Asian Countries, and more than 100 thousand hectares of forest were reported deforested within a short period of 1997 to 2000. However, forest regeneration to an appreciable level is reported recently upon coming of community forest user groups (CFUGs) into forest management.

In the areas of semi-commercialized agriculture, farmers are injudiciously using various pesticides for an increased productivity and risk mitigation in crop production, even though an average application rate of 142 g/ha and annual consumption of 176mta. of pesticides in Nepal is not considered high. According to Palikhe (2006), more than 60% of the applied pesticide remains in the soil materials polluting soil environment as a risk to terrestrial as well as aquatic biosphere. The residual effects of some of the chlorinated hydrocarbons like Chlorodane, BHC, DDT and aldrin remain in soil for a period of more than nine years. Imprudent disposal of obsolete pesticides is also of serious concern as a considerable quantity of persistent organic pollutants (POPs) stored in different warehouses would be detrimental to the prevailing ecosystem in the locality.

Average application rate of fertilizers in Nepal is relatively low. It is estimated in Nepalese situation that a general pattern of major cereals removed 310kg of plant nutrients from soil annually on a hectare basis. Since, on an average, only 29 kg of plant nutrients per hectare is added to soil through various fertilizers, net loss of plant nutrients from the inherent fertility reserve in the soil alarming.

Likewise, various types of agricultural operations and hazardous effluents from agro-industries and processing plants, slaughter houses and veterinary hospitals and clinics, when not collected and disposed safely (Haung, 2004), are subject to water, air and land pollution in the country. Despite being the second richest country in water resources in the world, chronic shortages of water at various places of the country is a common problem. Impurities in water increase with its scarcity and introduction into water sources of various pollutants because of agricultural operations such as drainage from agricultural lands and processing units. Deforestation, agricultural mechanization, processing plants and crop production such as paddy are responsible for emitting air polluting suspended particles such as CO₂ into the atmosphere. Carbon dioxide (CO₂) is considered as a very important green house gas (GHG), increasing concentration of which in the air is the threat to

maintaining the country with Low Carbon Economy (LCE). The aim of a LCE is to integrate all aspects of manufacturing, agriculture, transportation and power-generation with technologies that produce energy and materials with little GHG emission. Recently, most of the scientific and public opinions have concluded that there is an unreasonable accumulation of GHGs (especially CO₂) in the atmosphere; over-concentrations of which in the atmosphere would fundamentally change the earth's climate adversely affecting resource bases and lives in the foreseeable future. For which only humankind is blamed, and LCE is globally proposed as a mean to avoid catastrophic climate change and as a precursor to an ideal zero-carbon economy to maintain everlasting cycle of nature. Therefore, LCE is now considered as the necessary condition for modern agriculture as well.

7.1 Strategies for Environment Friendly Agriculture

Nepal, a country of villages and townships, is a dwelling of people making their livelihood largely from agriculture. Having a mountainous geography, very little area is cultivable with poor farming facilities. Because of the economic challenges Nepal is facing, its products cannot compete directly with the commodities of the international trading partners. Presence of plenty of resources with great diversities can be valuable assets to the country for producing agricultural unique products to exploit markets in the international trading arena. In view of the agricultural development situations in the country and environmental concerns aforesaid, Nepal can strategize its agri-businesses promotion and environmental protection through harnessing comparative advantages of diversified agro-ecological areas and microclimate there in producing niche products for the potential niche markets especially in India, China and other south Asian countries. Organic products, popular products associated with specific geography and the products with distinct uniqueness are the possible areas of production promotion for export. Some commodities such as honey, cardamom, tea, coffee, zinger, vegetable seeds, off season fresh vegetables and citrus fruit (especially mandarin) are the areas where Nepalese farmers can exploit the opportunity. In such view, Nepal has agri-business promotion policy with import substitution and export promotion instruments. However, agriculture sector in Nepal, though mentioned getting top priority in each of the periodic plans and fiscal years, is subject to low budgetary disbursement. Actual budgetary disbursement does not indicate the above stated scenarios. The state has provided the sector with less than 5% of its total annual budget in every year, while the sector is contributing more than 33% to national GDP. This does not coincide with the mission of attaining high economic growth through the intensive and accelerated growth in agriculture sector.

Niche products identification, promotion of such productions in value chain approach and quality assurance and certification are prerequisites for an assured international market of such unique products. In the value chain management, quality standards, timely and sizeable supply and competitive prices are also important as basic requirements of the products' movement into the global market system. Regular production of such products and their competitive disposal in the export markets also needs maintenance of consumer-friendly environment, and assurance of no or low creation of environmental (air, water, soil and/or other) pollution in their production

and processing, and thus necessitates very low emission of carbon into the surrounding biosphere. Quality concerns of them are also connected with good agricultural/manufacturing/hygienic practices (GAP/GMP/GHP), sanitary and phytosanitary requirements and good record keeping of such practices for the products' quality assurance and proving them free of pesticides and other harmful chemicals residues, certification by an internationally accredited laboratory and free movement to trans-border markets.

Thus farming with no or low use of agrochemicals becomes a strategic destination towards achieving sustainable development of Nepalese agri-businesses. Such would help to create low carbon economy in the country. Promotion of alternative energy sources like biogas, improved cooking stoves and solar energy from photovoltaic system is important also in achieving environment friendly agriculture development. The Alternative Energy Promotion Centre has been working on such promotions through a twenty-year master plan to reduce pressures on forest resources mainly due to fuel wood supply. Peoples and different devices in use can utilize the energy sources efficiently and recycle the wastes in a way to have a minimal GHGs output. Furthermore, it has been proposed that to make the transition to an LCE economically viable, we should cost on GHGs production through an approach such as emissions trading and carbon taxation based on natural and social justice.

7.2 Possibility for export

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8. Critical Assessment

The relationship of agriculture with environment is even more pronounced in case of Nepal, as the agriculture is the major economic activity of Nepal and this sector contributes around one third percent of total GDP. Despite some increase in agricultural production over the years, the population growth in Nepal has outstripped agricultural production resulting into a growing concern about sustainability of agricultural production system. Although the environmental consequences of agriculture in Nepal have not been alarming, there has been some reporting on the negative environmental impacts due to agriculture sector. Some of the issues of environmental implication reported are environmental effects due to excessive use of pesticides including use and disposal of Persistent Organic Pollutants (POPs) (Rizal and unbalanced use of chemical fertilizers improper agricultural practices in the uplands overgrazing of livestock and methane gas emission by livestock indiscriminate use of veterinary medicine and feed supplements in livestock, erosion of agro-biodiversity. These environmental issues indicate that there is a need for some policy/legal framework to govern such environmentally sensitive activities so that environmental effects of such activities can be minimized and ensure adoption of suitable mitigation measures. The provisions relevant to agricultural sector in the Environmental Protection Act (EPA), 1997 and the Environment Protection Rule (EPR), 1997 are supposed to address these concerns. This paper has attempted to examine the provisions in the EPA, 1997 and the EPR, 1997 and provisions related to agriculture and environment in relevant policy documents of GON such as National Agricultural Policy, 2004; and Tenth Plan, 2002. The paper has also discussed preparedness of Ministry of Agriculture Development (MOAD) to implement such legal and policy provisions. Finally, this paper has discussed mechanisms to facilitate the implementation provisions of EPA under MOAD.

9. Conclusion

As agriculture is closely linked with environment, the environmental consequences due to agriculture need to be regulated. In case of Nepal, the environmental consequences due to agriculture sector though not that alarming, some negative implications have been reported. The Environment Protection Act (EPA), 1997; Environment Protection Rule (EPR), 1997 and other policy documents of GON have provided framework for governing agricultural activities in order to minimize its environmental consequences. The provision of Initial Environmental Examination (IEE) and Environmental Impact Assessment (EIA) in EPA, 1997 provide basis for environmental assessment of activities related to agricultural sector in Nepal.

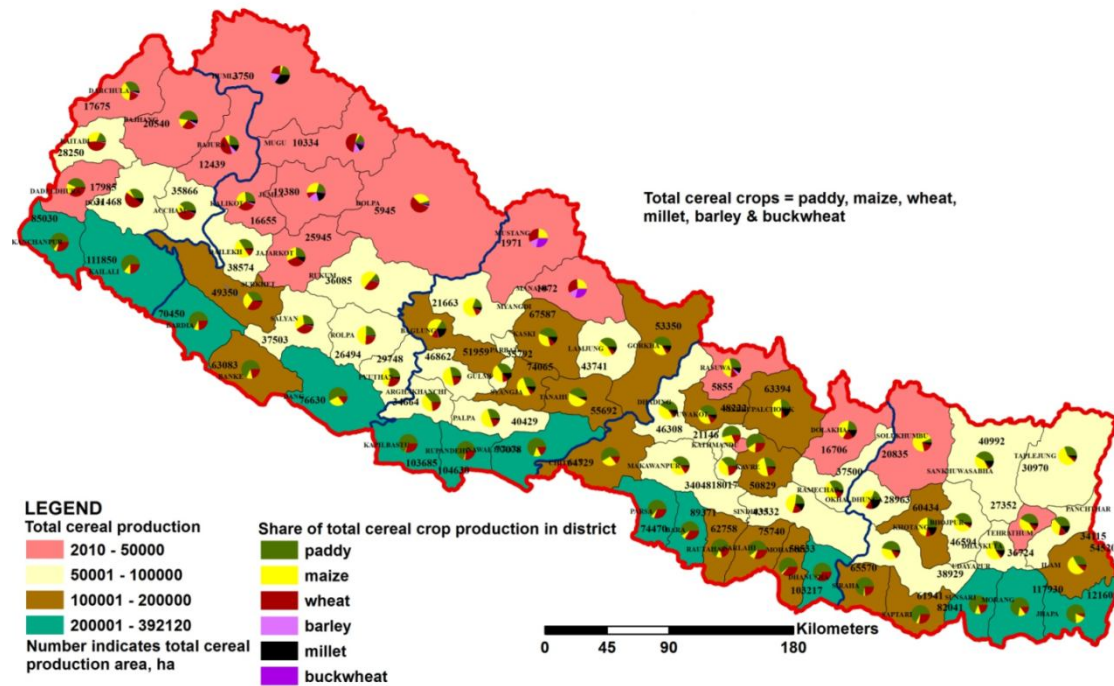
However, the implementation of the provision of IEE and EIA has not been that effective under Ministry of Agriculture Development (MOAD). Various policy and implementation constraints are impeding the functional implementation of EPA under MOAD. Some of the anomalies in EPR, 1997, lack of explicit 'agro environment policy and procedural guidelines for agriculture sector' and inadequate capability development of human resources under MOAC in environmental issues are the major constraints identified.

The intensive use of inputs with green revolution has not only polluted soil, water and environment causing slow degradation but also affected human beings and animals. With this realization, organic agriculture emerged since late eighties as an alternative to reduce such hazards. At present, world market for organic produce is increasing and people are ready to pay the premium for foods raised without the use of chemicals. As majority of farms in Nepal are still in traditional farming, there is a good prospect to adopt organic measures. However, as per the world regulatory functions, Nepal still face challenges in terms of product certification and other relevant infrastructures and policy framework. In the context of WTO, Nepal needs to re-examine existing policies and formulate policies that support for wider adoption of organic agriculture for which research on technological aspects of organic farming relevant to Nepalese context needs to be carried out.

Organic agriculture can be a sustainable alternative to mitigate the adverse effects of chemicals on human health and environment. Contrary to traditional farming, where farmers use local and indigenous resources, limited organic agriculture with the use of bio fertilizers and pesticides, favors greater production. However, for a developing country like Nepal, lower production in organic farming in the initial years need to be compensated with assured supply of organic manures, pesticides and market assurance. Programs and policies need to support the production and use of organic manures and researches on use of bio-pesticides and other inputs needs to be strengthened.

Appendix-1

Map On Distribution, Production and Share of Total Cereal Crops Production, 2010/2011



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Abbreviations/Acronyms

EIA	-	Environmental Impact Assessment
EPA	-	Environment Protection Act
EPR	-	Environment Protection Rule

FY	-	Fiscal Year
GAP	-	Good Agricultural Practices
GDP	-	Gross Domestic Product
GHG	-	Green House Gas
GHP	-	Good Hygienic Practices
GMP	-	Good Manufacturing Practices
GNP	-	Gross National Product
GON	-	Government of Nepal
IEE	-	Initial Environmental Examination
LCE	-	Low Carbon Economy
MOAD	-	Ministry of Agriculture Development
Rs.	-	Rupees
WTO	-	World Trade Organization

Economic Attributes of the Kashmiri Migrants Peoples

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The economic attributes of a population relate to the economic activities of people. Economic attributes indirectly offer a peep into the social fabric of a group. An analysis of a population's economic composition unfolds the diverse economic, socio-demographic and cultural attributes of an area which forms the basis for region's social and economic development. These characteristics unfold the type of economy prevailing in the area. It is in this backdrop that an attempt is being made to understand the economic activities being undertaken by the Kashmiri migrants in their new habitats.

Occupational Structure

According to the Webster's Dictionary of English Language, occupation is defined as any "economically gainful activity by which one earns one's living or fills one's times". The term is by and large associated with the adult group of society. 'Occupational Structure' refers to the distribution of working population in different occupations. Each person in a population is a consumer but only a small proportion of population is contributing to its production. So, the population of a region can be divided into two categories:

- i. Working population (economically active population), and
- ii. Non-working population (dependents).

Working population is that population which is participating in any economically gainful or productive work. It includes self-employed persons (businessmen, doctors, engineers, etc.), those employed in government service and private service, employers, daily wagers, laborers, servants etc. On the other hand, non-working population consists of housewives, unemployed persons, those pursuing education (full time students), infants (children), disabled, old persons and the people receiving money without participating in any productive activity such as pensioners, relief holders, family pensioners, etc.

Table 1 : Selected Areas of kashmiri Migrant In Jammu Tehsil : Proportion of worker and Non-worker.

S. No.	Areas	Workers						Non - Works							
		Males	%age of the Total Workers	Females	%age of the Total Workers	Total	Workforce in %age	Student	Un-employed	Household duties	infants	Disabled persons	aged	Total Non-workers	Non working force
	Camp Areas														
1.	Muthi Camp Phase-I	22	91.67	2	8.33	24	25.26	24	9	23	9	0	6	71	74.74
2.	Muthi Camp Phase-II	17	100.0	0	0.00	17	20.00	21	12	20	6	1	8	68	80.00
3.	Mishriwala Camp	12	92.30	1	7.70	13	17.80	12	15	18	5	0	10	60	82.19
4.	Purkhoo Camp Phase-I, II	16	100.0	0	0.00	16	17.20	20	20	22	8	0	7	77	82.79
5.	Purkhoo Camp Phase-III	13	92.85	1	7.15	14	16.27	21	21	18	5	1	6	72	83.72
6.	Nagrota Camp14	14	100.0	0	0.00	14	18.19	14	15	19	6	0	9	63	81.82
	Total (Camp)	94	95.92	4	4.08	98	19.26	112	92	120	39	2	48	411	80.74
	Non-camp Areas														
7.	Durga Nagar	26	86.67	4	13.33	30	28.84	15	5	32	5	1	16	74	71.15
8.	Muthi Village	22	88.00	3	12.00	25	30.12	17	3	26	5	1	6	68	81.92
9.	Bantalab	20	90.90	2	9.10	22	25.00	14	6	29	7	0	10	66	75.00
10.	Janipur	21	84.00	4	16.00	25	27.78	21	4	29	3	0	8	65	72.23
11.	Bohn	26	86.67	4	13.33	30	27.52	22	9	32	4	1	11	76	72.47
12.	Gangyal	25	89.28	3	10.72	28	27.18	19	9	30	5	0	12	79	72.81
	Total (Non-Camp)	140	87.50	20	12.50	160	27.72	108	36	178	29	3	63	417	72.27
	Overall Total	234	90.70	24	9.30	258	23.75	220	128	298	68	5	109	828	76.24

Source : Field work by the researcher.

The proportion of a population that is economically active is an important factor which affects the entire stream of production. It is influenced by factors like age-structure, age at marriage, average family size, levels of income, level of education and state of health. In the under-developed and developing countries the work force tends to be small and there is heavy dependence on work force owing to high proportion of children and seniles in the population- The proportion of workers and non-workers of the selected households of the Kashmiri migrants in Jammu Tehsil have be given in the Table 5.1,

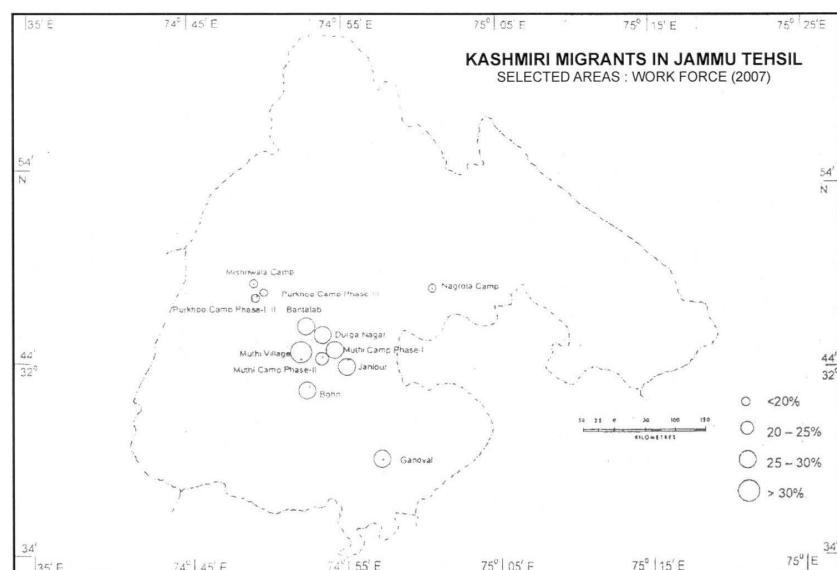
As is evident from Table 5.1 the overall average work force of the Kashmiri migrants is 23.75% which is far less than the national average of 39.3% (as per 2001 census) and even less than the State average of 36.6% (as per 2001 census). It is also

evident from Fig 5.1a that the active labour force is substantially low in all the areas, it being as low as 17.20% in the Purkhoo Camp Phase-I and H and the highest participation rate being 30.12% in the Muthi Village.

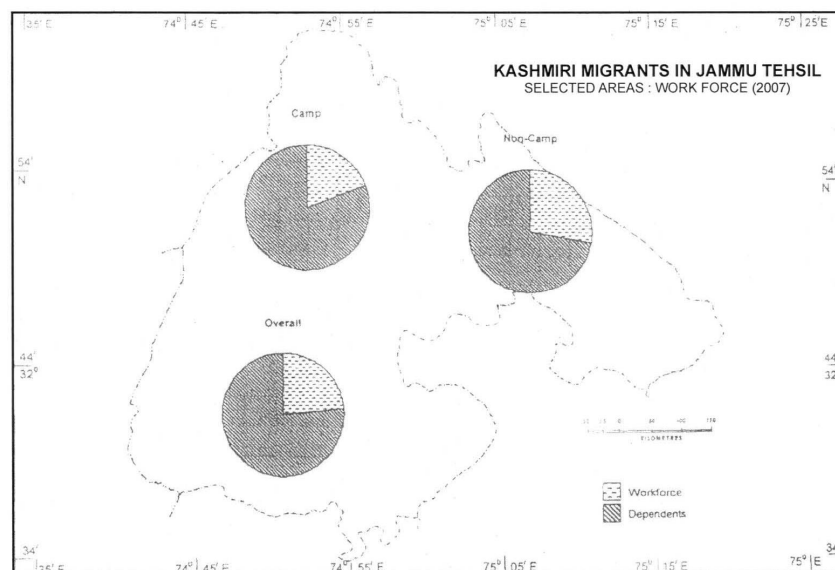
Table : Selected Areas of Kashmiri Migrants in Jammu Tehsil: Frequency-wise Workforce.

Category	Percentage	Frequency	Area/3
A	<20	A	Mishriwala Camp, Purkhoo Phase-I, (I, Nagrota Camp, Purkhoo Camp Phase-III
B	20-25	1	Muthi Camp Phase-II
C	25-30	6	Bantalab, Janipur, Durga Nagar, Muthi Camp Phase-I, Bohri, Gangyai,
D	> 30	1	Muthi Village

Source Field Work by Researcher



Figure



Figure

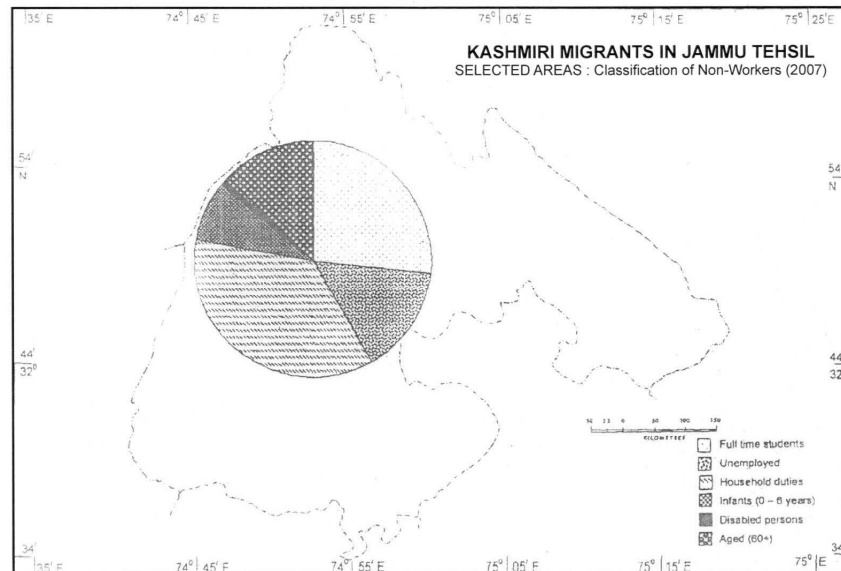
Depending upon the magnitude of work force the selected areas From the above table it is evident that in four areas the work force is extremely low i.e below 20%. These are Mishriwala, Purkhoo-I, II, Nagrota and Purkhoo - ill migrant camps (see Fig 5.1 b). In one area i.e. Muthi Camp Phase-II, the work force is 20% and as such lies in the second category. Six areas fall under the third category, where workforce is between 25 - 30These areas are Bantalab, Janipur, Durga Nagar, Muthi Camp Phase-I, Bohri and Gangyal. The.highest percentage of work force (above 30%) is in the Mutht Village which has been placed in the fourth category. However, in all the categories the work force is substantially low.

The reasons for the low work force among Kashmiri migrants in Jammu have been summarized as under:

- i. fairly large student/child population,
- ii. less participation of women in the economic activities,
- iii. unsuitable/unsatisfactory jobs for the educated,
- iv. lack of job opportunities,
- v. the problem of unemployment,
- vi. out-migration of educational workers.

Apart from these reasons another important contributing factor is the absence of agricultural activity in the new habitats. "Majority of the Kashmiri migrants belonging to rural areas in Kashmir were owners of agricultural lands, orchards etc. and were, thus, engaged in productive work in one or the other form. After migration the whole lot of agricultural workers remains idle, and thereby contributing to the huge non-working force. This is evident from the fact that camps which are dominantly inhabited by population having rural background have lesser percentage of workforce

than their counterparts - the camp migrants (which have predominance, of urbanites). The percentage of work force in camps being 19.25% and that in non-camp areas being 23.75% respectively .



Figure

It would be pertinent to analyse here the composition of non-workers in order to understand the huge magnitude of non-workers among Kashmiri migrants .

Table : Selected Areas of Kashmiri Migrants in Jammu Tehsil: Classification of Non-Workers (2002)

S.No.	Category	Number	Percentage
1.	Full time students	220	26.57
2.	Unemployed	128	15.46
3.	Household duties	298	35.99
4.	Infants (0-6 years)	68	8.21
5.	Disabled persons	5	0.60
6.	Aged {60+}	109	13.17
	Total	828	100.00

Source: Field work by researcher

As is evident from Figthe maximum percentage of dependents is that of females engaged in household chores - it being 35.99% of the total non-workers. They are followed by full time students 26.57%. This is due to the fact that migrants attach priority to education. Then there are 15.46% unemployed 13.17% aged persons. Infants constitute 8.21% while disabled are just 0.60%.

Sectoral Division of Economy

The economy of any society undoubtedly among other things, depends upon the strength of its work-force. On the basis of types of activities performed as well as on the basis of modes of production, activities of the work-force can be classified as under:

- i. Primary economic activities;
- ii. Secondary economic activities; and
- iii. Tertiary economic activities

Primary economic activities are related to the production of primary goods. The goods are not primary because they are of primary importance but because they are primarily the first to develop in any economy and their products are essential and vital for human existence (Sinha, 1979, p. 165). The primary group includes several occupations of which the most important is agriculture. It also includes fisheries, forestry and hunting, mining and quarrying. Given the premise the primary economic activity is totally absent in the Kashmiri migrants living in different parts of Jammu tehsil: Although most of them were basically, directly or indirectly, involved with the primary sector in the Kashmir valley but after migration, it has been an altogether a different story : a search for a piece of land for a shelter, let alone agriculture.

In the secondary economic activities the society is associated with the production of material goods, which includes small scale industries, household industries, extractive industries, manufacturing industries and also the construction work. At the time of survey, 21 out of the total work force of 258 persons were engaged with the secondary economic activities .

Table : Selected Areas of Kashmiri Migrants in Jammu Tehsil: Sectoral Division of Labour Force

S. No.	Areas	Primary Sector	Secondary Sector		Tertiary Sector	
		Number	Number	Percentage	Number	Percentage
	Camp Areas					
1	Muthi Camp Phase-I	0	2	8.33	22	91.67
2	Muthi Camp Phase-II	0	1	5.88	16	94.11
3	Mishriwala Camp	0	0	0.00	13	100.00
4	Purkhoo Camp Phase-I, II	0	2	12.5	14	87.50
5.	Purkhoo Camp Phase-III	0	2	14.28	12	85.72
6.	Nagrota Camp	0	1	7.4	13	92.86
	Total (Camp)	0	8	6.16	90	93.83
	Non-camp Areas					
7	Durga Nagar	0	3	10.00	27	90.00

6	Muthi Village	0	2	800	23	92.00
9	Banlalab	0	3	13 60	19	86.30
10	Jampur	0	1	4.00	21	96 00
1 1	Bohri	0	2	6.67	28	93 30
12	Gangyal	0	2	7.14	26	92 86
	Total (Non-Camp)	0	13	8.12	147	91.88
	Overall Total	0	21	6.13	237	91.86

Source : Field work by researcher

Monthly Family Income

Income is one of the important indices of socio-economic status. Income of a person's related to the nature of his/her occupation. Increase or decrease in income is directly related to the nature and type of job or the economic activity he/she pursues. The mode of life, savings, investment and overall standard of life of people depend on it. Thus, both the income pattern and the trend in growth of income are important for economic analysis of the people.

In their native places, as pointed out earlier, majority of the Kashmiri migrants were engaged in primary sector i.e. agriculture, however, after migration there has been a complete shift in their nature of economic activities. There is now total dominance of tertiary and secondary economic activities and not surprisingly there has been drastic reduction in their income patterns as compared to their native places. However in case of Kashmiri migrants who were in tertiary sector in the places of origin are better off due to increase in wage patterns over the last few years. The following table shows the distribution of respondents according to their monthly income before migration and at present i.e. after migration. The data clearly shows that there is noticeable fall in the earnings of the respondents as compared to their earnings when they were in Kashmir.

Table : Distribution of Kashmiri Migrants on the Basis of Their Monthly Income

S. No.	Category (Monthly Income in Rs.)	Income at the Native Place		Income at Present	
		Number	Percentage	Number	Percentage
1	Upto- 2400	15	6.25'	117	48.75
2.	2400 -4000	32	13.33	44	18 33
3.	'4000-6000	108	45.00	38	15.83
4.	6000-8000	62	25.83	20	8.33
5.	8000- 10000	17	7.08	12	5.00
6.	10000 - above	6	2.50	9	3.75
	Total	240	100	240	100

Source : Field work by the researcher.

The above table shows that majority of the migrants (45%) had monthly income Rs. 4000 - 6000 at their native place 6.25 per cent of the respondents had income less than Rs. 2400 - 4000, while 25.83 per cent migrants had income of Rs. 6000 - 8000. There were just 7.08% and 2.5% of the respondents who had very high monthly income i.e. Rs. 8000 - 10000 and 10,000 and above respectively. Thus, it is clear that majority of the migrants were quite well to do in their native places. Their monthly incomes were neither too small nor too much. Agricultural income was supplement to other income particularly for those who were in the secondary or tertiary jobs and as such was an added advantage.

However, after migration due to loss of agricultural income and other avenues most of the migrants have to live on the cash assistance provided by the government (maximum of Rs. 2400 per month per family). Thus, almost 48 per cent of the migrants have their income below Rs. 2400 at present. Nearly, 18.33 per cent of the respondents have monthly of Rs. 2400-4000 while 15.83 per cent had income of Rs. 4000 - 6000 per month. There were very few migrants in the upper income groups, of Rs. 6000 - 8000 (8.33 per cent). 8000 - 10000 (5 per cent) and 10,000 and above (3.75%). The migrants in the upper income groups are mostly in the tertiary sector or those who have more than one earning members in the family. Thus, migration has resulted in a great economic loss for the migrants.

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Cooperative Learning Approach in Learning Mathematics

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Abstract

Mathematics is taught as one of the subjects in schools, colleges and universities. Mathematics is considered as “The Queen of all Sciences”. However, it is unfortunate to note that mathematics in general, is disliked by students and is not taught effectively by all teachers of mathematics in a classroom. Majority of the pupils feel that mathematics is a difficult subject and it can be understood and followed only by exceptionally intelligent students. Those who fail in the subject develop hatred towards it.

At present, majority of mathematics teachers follow the traditional methods of instruction in schools. What is required is learner centered approach to enable them to work on their own with little support from the teachers. When teachers carry out instructional process in the classroom, learners tend to be more passive listeners. No lessons can be effective unless there is effective pupil participation in it. In order to enable the learners to participate in the instructional process, there is an imperative need to adopt some kind of learner-centered new approaches in the classroom.

Cooperative learning approaches enable all the learners in the classroom to work together and arrive at the final solution on the basis of teamwork. Cooperative learning approaches not only contribute to intellectual development of learners but also equally contribute to social and psychological development of the learner unlike other methods of instruction. Thus the cooperative learning approach fulfills the individual and social goals of education. In this context, any research in cooperative learning approach becomes significant.

Cooperative Learning Approach

Cooperative learning is a structured systematic instructional strategy in which a small

group of students work together towards a common goal.

Objectives of the Study

- To find out the effectiveness of the Cooperative Learning Approach over Conventional Method in learning mathematics at high school level.
- To compare the achievement of the High, Average, and Low achievers when taught through Conventional Method.
- To compare the achievement of the High, Average, and Low achievers when taught through Cooperative Learning Method.
- To find out and compare the achievement of Conventional Method group and Cooperative Learning Method group with respect to Sex, Locality of the house, Tuition undergone, Type of tuition.

Hypotheses

- There is significant difference between the post-test scores of students in Cooperative Learning Method group and Conventional Method group.
- There is significant difference between the post-test scores of High, Average and Low achievers in the Conventional Method group.
- There is significant difference between the post-test scores of High, Average, and Low achievers in the Cooperative Learning method group.
- There is significant difference between the pretest and post-test scores of Conventional Method group and Cooperative Learning Method group students in terms of Sex, Locality of the house, Tuition undergone, Type of tuition.

Methodology

Two equivalent groups and experimental design is employed for this study.

Sample

The convenience sampling is used for this study. A sample of 48 students studying IX standard of both sexes was taken from 2 schools of Adilabad district. 24 students were selected from each school, where the students selected belonged to the classes suggested by the principal of the institute.

Tools used for the Study

The data required for the present study were collected using the following tools:

- Lesson transcripts based on the cooperative learning approach on polynomials in mathematics in Std. IX.
- Achievement Test (Pre-test and Post-test) in mathematics.

The content validity of the prepared lesson plan and achievement test was assessed on the basis of the judgement of the experts. The reliability of the achievement test was established through split-half method. The reliability coefficient is 0.89 and hence the tool is a reliable one.

Procedure

Samples were divided into two groups of 24 each. One was the Experimental group and the other the Control group. The Experimental group studied the topic in Cooperative Learning Method and the control group in the Conventional way of learning.

Pretest Conducted

The achievement test prepared was administered to both the groups before teaching them the topic 'Polynomial' in Algebra. Their scores were collected.

Learning by Cooperative method (Jigsaw Method of Cooperative Learning)

The investigator divides the experimental group into three groups with each consisting of six members. Each group member is given a subtopic and the investigator asks the students to study their portion. This group is known as the base group. After they finish their individual study the teacher asks the students to form groups corresponding to their subtopic, which they have chosen. Thus the students form six groups with each consisting of three members. This is known as the expert group. Now the students are allowed to discuss what they have studied.

After discussing in the expert group, the students' return to the base group and explain what they have discussed in the expert group. Hence all the 24 students have a clear idea about polynomials. While conducting this approach the students are allowed to clear their doubts that arise, by discussion with the investigator.

Learning by Conventional Method

The control group was taught the same topic with the prescribed textbook in the traditional way by the investigator herself.

Post-test Conducted

The achievement test was administered to both the groups and the answer sheet was collected and scored.

Statistical Techniques Used

1. 't' test
2. F test

Analytical Discussion (Findings)**Hypothesis I**

There is significant difference between the post-test scores of students in Cooperative Learning Method group and Conventional Method group.

Group	No. of Students	Mean	S.D.	t value	Table value	Result
Control Group	24	16.04	3.78	26.7062	1.96	Extremely significant
Experimental Group	24	38.46	1.61			

Since the calculated t value is higher than the table value at 5% level of significance the hypothesis is accepted.

The students perform well when taught through Cooperative Learning approach.

Hypothesis II

There is significant difference between the post-test scores of High, Average, and Low achievers in the Conventional method group.

Groups	Count	Sum	Average	Variance
High Achievers	6	116	19.333	11.467
Average Achievers	10	150	15	11.556
Low Achievers	8	119	14.875	11.544

Source of variation	Sum of Squares	df	Mean Square Variance	F value	Table value	Result
Between Groups	86.75	2	43.375	3.761	3.467	Significant
Within Groups	242.2083	21	11.53373			

Since calculated F-value is higher than the table value at 5% level of significance, the hypothesis is accepted.

The performance of High, Average and Low achievers differs when taught through the Conventional method.

Hypothesis III

There is significant difference between the post-test scores of High, Average, and Low achievers in the Cooperative Learning method group.

Groups	Count	Sum	Average	Variance
High Achievers	6	231	38.5	4.3
Average Achievers	9	345	38.33	2
Low Achievers	9	347	38.56	2.78

Source of variation	Sum of Squares	df	Mean Square Variance	F-value	Table value	Result
Between Groups	0.236	2	0.118	0.042	3.467	Not significant
Within Groups	59.72	21	2.844			

Since calculated F-Value is less than the table value at 5% level of significance, the hypothesis is rejected.

The performance of High, Average and Low achievers are equal when taught through Cooperative Learning approach.

Hypothesis IV

There is significant difference between the pretest and post-test scores of Conventional Method group and Cooperative Learning Method group students in terms of Sex, Locality of the house, Tuition undergone, Type of tuition.

Group	No. of Students		Mean	S.D.	t value	Table Value	Result
Control Group (Male)	12	Pretest	11.25	4.43	3.0496	1.96	Significant
		Post-test	16	3.07			
Experimental Group	12	Pretest	10.58	3.85	23.813	1.96	Extremely Significant
		Post-test	38.67	1.37			
Control Group (Female)	12	Pretest	9.92	4.40	3.386	1.96	Significant
		Post-test	16.08	4.52			
Experimental Group	12	Pretest	10.50	4.64	19.217	1.96	Extremely Significant
		Post-test	38.25	1.86			
Control Group (Rural)	15	Pretest	11.8	4.54	3.5119	1.96	Significant
		Post-test	17	3.51			
Experimental Group	14	Pretest	10.57	3.48	27.889	1.96	Extremely Significant
		Post-test	38.36	1.34			
Control Group (Urban)	9	Pretest	8.56	3.4	3.4283	1.96	Significant
		Post-test	14.44	3.88			
Experimental Group	10	Pretest	10.5	5.19	15.962	1.96	Extremely Significant
		Post-test	38.6	2.01			
Control Group (Undergone Tuition)	16	Pretest	10.06	4.30	4.1636	1.96	Significant
		Post-test	16.19	4.02			
Experimental Group	8	Pretest	11.5	4.34	16.352	1.96	Extremely Significant
		Post-test	38.75	1.83			
Control Group (not undergone Tuition)	8	Pretest	11.63	4.63	2.2012	1.96	Significant
		Post-test	15.75	3.49			

Experimental Group	16	Pretest	10.06	4.14	25.594	1.96	Extremely Significant
		Post-test	38.31	1.54			
Control Group (Group Tuition)	12	Pretest	10	4.67	3.2857	1.96	Significant
		Post-test	15.75	3.86			
Experimental Group	6	Pretest	12.67	4.41	13.015	1.96	Extremely Significant
		Post-test	38.33	1.97			
Control Group (Individual Tuition)	4	Pretest	10.25	3.5	2.4422	1.96	Extremely Significant
		Post-test	17.5	4.8			
Experimental Group	2	Pretest	8	1.41	32	1.96	Extremely Significant
		Post-test	40	0			

There is an extremely significant difference between the pretest and post-test scores of experimental method group with respect to Sex, Locality of the house, Tuition undergone and Type of tuition. But there is little significant difference between the pretest and post-test scores of Control group with respect to Sex, Locality of the house, Tuition undergone and Type of tuition. Hence the hypothesis is accepted.

In this study, the cooperative learning approach was found to be more effective than the conventional method. The conventional method can make improvement in the achievement of the pupil to a certain extent. But when compared with the cooperative learning approach the conventional method is not as much effective.

Suggestions

- The curriculum should be modified to suit the cooperative learning approach.
- The teacher should be given proper training for this purpose.
- We should start with giving practice to students in using cooperative strategies.
- Model lesson transcripts based on the cooperation learning approach, on selected units may be developed by an expert team and made available to the teacher.
- For different levels of tasks, steps should be envisaged for each task and training given to students in learning each step and also all the steps in a coordinated manner.

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Understanding the Emotional Competence of School Teachers

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Abstract

“Emotional competence as the ability to understand, manage and express the emotional aspect of one’s life in ways that enable the successful management of life tasks such as learning, forming relationships, solving everyday problems, and adopting to the complex demands of growth and development”

Elias(1997)

Emotions are internal events that coordinate many psychological subsystems including physical responses, cognitions and conscious awareness. Emotions typically arise in response to a person’s changing relationships. Emotions and intellect are two halves of a whole. Intelligence Quotient (EQ) are synergistic resources; without one the other is incomplete and ineffective. The domain of EQ is personal and interpersonal relationships; it is responsible for one’s self-esteem, self-awareness, social sensitivity and social adaptability. Emotional awareness brings one’s inner world into focus. It enables one to strike a mutually healthy balance between one’s own needs and the needs of others.

Interpersonal skills are critical in the workplace. This is especially true in an executive’s role. Apart from problem solving, decision making and other job functions, office politics, morale problems and lack of cooperation can also add to the executive’s stress. An emotionally competent person can effectively monitor this. Emotional intelligence is the ability to motivate oneself, and permit in the face of frustration to control impulses and delay gratification. Awareness of one’s own feelings will help in developing integrity and finding personal fulfillment at work. If the executive can read and respond to other people’s feelings, many interpersonal conflicts can be minimized. Emotional competence is a critical component of an individual’s personality and must form part of any research on leadership.

A leader has to be objective-oriented and must be emotionally stable without getting drowned in emotion. If executives properly balance emotion and sentiments, automatically productivity and efficiency would increase. Most of the executives suffer a setback because of the lack of emotional competence. An emotional stability can relieve them from crisis. According to Hein, Steve (1996) executives are derailed because of emotional problems rather than a lack of technical ability. Therefore, it becomes necessary for the executives to balance their emotions to execute their leadership styles. Executives' leadership styles require a high degree of emotional competence rather than academic competence for better productivity, improved performance and good quality of life.

Emotional competence is nothing but doing anything into doing it well; it is essentially a display of competence and whenever this aspect of personality is related to emotions, it shall be deemed as emotional competence, which happens to be efficiency that an individual acquires to deal with emotional situations effectively.

Objective

This study aims to understand the emotional competence of schoolteachers of Karimnagar district Andhra Pradesh, India

Hypothesis

Following the objective certain hypotheses have been formulated;

- There is no significant difference between the teachers having higher qualifications and teachers having the essential qualifications in respect of their level of emotional competence.
- There is no significant difference between any two categories of sub-samples of teachers belonging to different groups in relation to their experience in respect of their emotional competence.
- There is no significant difference between the teachers of government schools and private schools in respect of their level of emotional competence.

Methodology

Sample

300 primary schoolteachers, of Karimnagar district in Andhra Pradesh State were selected as sample by using random sampling technique.

Tool

In order to collect the necessary data to achieve the objective of the study the Emotional Competence scale by Sharma and Bhardwaj is used.

Method of Scoring

Emotional Competence Scale

Sharma and Bahrdwaj have constructed and published this scale. It identifies five different competencies in emotions such as (a) adequate depth of feeling, (b) adequate expression and control of emotions, (c) ability to function with emotions, (d) ability to cope with problem emotions, and (e) encouragement of positive emotions. This scale consists of 30 items with five alternative answers. The five alternatives are designed on Likert model of five point scale. The respondent has been asked to respond to any one alternative of each item by marking a (P) tick. The following table shows the item number in the questionnaire to measure the five different competencies in the scale.

Scoring Procedure

The alternative answers to each question have been scored in a system of 1, 2, 3, 4 and 5 from upper to lower end. The direction of the highest score is interpreted as highly competent in emotion and the direction of the lowest score is interpreted as highly incompetent in emotion.

Administration of the Tool

After the required permission had been sought and obtained from the heads of the institutions for collecting information from teachers, the investigator personally contacted the subjects. Each one of them was given a questionnaire booklet according to the instructions furnished at the beginning of each questionnaire. The respondents were assured of confidentiality of response and were encouraged to express their ideas and opinion frankly and freely. Precautions were also taken to obtain unbiased results. The teachers were observed to be very appreciative and cooperative in this endeavor. The researcher collected the completed questionnaires personally. The responses were scored according to the scoring methods of the respective scales and the results were tabulated, analyzed and discussed.

Statistics Used

Statistical measures such as Mean, SD, t-tests and Analysis of Variance, were used to interpret the obtained data.

Results and Discussion

Table-1: t-test for Emotional Competence: Essential and Higher Qualification

Question	N	Mean	SD	t-value	Level of significance at 0.01
Essential Qualification	181	91.54	12.35	3.896	Significant
Higher Qualification	119	97.08	11.83		
Total	300				

Null Hypothesis

There is no significant difference between the teachers having higher qualifications and teachers having the essential qualifications of Karimnagar district in Andhra Pradesh State in respect of their level of emotional competence.

The obtained t-value is significant at 0.01 level of significance. Therefore the null hypothesis is rejected and it is concluded that there is significant difference between the teachers having essential qualification also only and teachers having higher qualification also in respect of their emotional competence. Hence the teachers having higher qualifications have better emotional competence than teachers having essential qualifications only.

Table 2: F-test for Emotional Competence : Service.

Service	N	Mean	SD	F-test	Level of significance at 0.01
Below 10 yrs.	105	94.83	12.02	1.52	Not significant
11-20 yrs.	65	94.83	11.75		
Above 20	130	92.31	13.01		
Total	300	93.74	12.42		

Null Hypothesis

There is no significant difference between any two categories of sub-samples of teachers belonging to different groups in relation to their experience, in respect of their emotional competence.

The obtained 'F' value is not significant at 0.01 level. Therefore the null hypothesis is accepted and it is concluded that there is no significant difference between any two categories of sub-samples of teachers having experience below 10 years, (11-20) years and above 20 years in respect of their level of emotional competence.

Table 3: t-test for Emotional Competence: Type of the Service.

Service	N	Mean	SD	t-value	Level of significance at 0.01
Government	105	94.14	13.67	0.396	Not significant
Private	195	93.52	11.72		
Total	300				

Null Hypothesis

There is no significant difference between the teachers of government schools and private schools in respect of their level of emotional competence.

The obtained t-value is not significant at 0.01 level. Therefore null hypothesis is accepted and it is concluded that there is no significant difference between government school teachers and private school teachers in respect of their emotional competence.

Conclusions

The primary school teachers of Karimnagar district, Andhra Pradesh State have average level of emotional competence. The teachers having higher qualifications are found to have better emotional competence than teachers having higher qualifications are found to have better emotional competence than teachers having essential qualifications only. Also the result showed that there is no significant difference between any two categories of sub-samples of teachers belonging to different groups in relation to their experience, in respect of their emotional competence.

Further the result reveals that there is no significant difference between the teachers of government schools and private schools in respect of their level of emotional competence.

Recommendations

Based on the findings and conclusion the investigator recommended the following. The present investigation has clearly indicted and thrown much light on emotional competence of primary schoolteachers of Karimnagar district in Andhra Pradesh State.

The following recommendations if implemented will go a long way in the development of emotional competence.

- There should be reorientation programmes for teachers regularly.
- Yoga and meditation should be an integral part of pre-service and in-service training programmes.
- Give opportunity for the teachers to acquire higher qualifications.
- Teacher training curriculum should be so reorganized as to develop the emotional competence of teacher trainees.
- Special counseling and guidance programmes should be conducted for developing the emotional competence of teachers.

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Teachers' Demographic Characteristics, Attributes and Students' Cognitive Dimensions : A Correlation Analysis

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Abstract

Psychologists studied teacher effectiveness from different angles (Ryans, 1960; Check, 1986 and Veeraraghavan & Samal, 1988) and it has been reported that there is a positive relationship between teacher effectiveness and students' academic achievement (Duffy, 1983; Blair, 1984; Joshi, 1984; Goyal & Agarwal, 1984). Ryans found that successful teachers were more understanding, warm, friendly, responsible, systematic, stimulating, imaginative and enthusiastic than the less successful ones. Schools may have excellent equipment, buildings and textbooks, although curricula would be appropriately adopted to community requirements; but if the teachers were misfits or indifferent to their responsibilities, the whole programme was likely to be ineffective and largely wasted (Ryans, 1969).

Teacher effectiveness is an amalgamation of both cognitive and non-cognitive attributes like academic qualification and distinctions, clarity of thought and expression, fluency, teaching strategy, charisma, experience and socio-personal interactions. The present study incorporates some of the demographic variables of the teachers like educational qualifications, age, experience and income and their attributes like expectations, competency and teaching strategy and attempts to examine the relationship between teacher's demographic variables and their attributes, and whether these variables are related to students' psychological differentiation and academic achievement. Psychological differentiation was conceived as a cognitive perceptual process (Witkin, et.al., 1962), which enabled individuals to differentiate simple figures in a complex setting and thus indicated one's cognitive level. Field Independent (FI) and Field Dependent (FD) cognitive styles were the two dimensions of psychological differentiation.

Method

Sample

120 teachers and 600 students (class IV and V) of primary schools of Andhra Pradesh were included in the study. The teacher student ratio was 1:5.

Tools

Teachers' personal information sheet was used to record name, age, sex, educational qualification, years of service and income.

Teacher Expectations Form (Mohanty, 1991). It is based on probable expectation of teachers from the school, self and colleagues, parents and students.

Teacher Characteristics Description Form (Arora, 1978). It measures teachers competency through 6 dimensions like personal characteristics, professional characteristics, academic background and scholarship, pupil-teacher relationship, classroom management skills and miscellaneous. Original items were restated to suit the purpose of measuring teacher's competency at primary school level.

Teaching Strategy Inventory (Mohanty, 1991). This has been designed on the basis of "Approaches to Studying Inventory" (by Entwistle and Ramsden, 1983). It has 4 teaching strategies namely, 1. Meaning Orientation : It involves comprehension teaching. It has 4 subscales like Deep Approach (Active questioning during teaching), Relating Ideas (Relating ideas from one part to the other parts of the course), Use of Evidence (Relating evidence to conclusions) and Intrinsic Motivation (Natural interest in teaching for learning/understanding). 2. Reproducing Orientation : It involves mechanical / surface level (operation) teaching. The four subscales are surface approach (Preoccupation with Memorization), Syllabus bound (Teaching according to the syllabus, doesn't go beyond the prescribed portion), Fear of failure (Pessimism and anxiety about teaching outcomes) and Extrinsic Motivation (interest in other jobs which are found more challenging and attractive). 3. Achieving Orientation: It is based on achieving approach. The four subscales are, Strategic Approach (Awareness of the implications of teaching demands and managing them quite tactfully), Discorganized Study Method (Unable to work regularly and effectively), Negative Attitude (Lack of interest and application to teaching) and Achievement Motivation (Competitive and confident) and 4. Styles and Pathologies of Teaching: It represents diversified teaching. The four subscales are, Comprehension Teaching (Readiness to map out subject area and think divergently), Globetrotting (Over ready to jump to conclusions), Operation Teaching (Emphasis on facts and logical analysis) and Improvidence (Overcautious reliance on details).

Sinha's (1984) SPEET (Story Pictorial Embedded Figure Test) is used for measuring students' psychological differentiation. The test is culturally appropriate since it provides test materials, which are familiar and meaningful in the Indian setting. The test has eleven sets of cards. Eight sets are for measuring psychological differentiation and three are for practice trials. Each set has a simple and a complex card.

Table-1: Correlations between Teachers' Demographic Characteristics and their Attributes (expectation, competency and teaching strategy)

Teachers' Attributes/ Demographic Characteristics	Expectation	Competency	Teaching Strategy			
			MO	RO	AO	S & P
Educational Qualification	0.14	0.09	0.09	0.05	0.01	-0.10
Experience	-0.19	-0.08	-0.07	0.07	-0.12	-0.14
Income	0.23*	0.29**	0.31**	0.01	0.01	0.06
Age	-0.26*	-0.13	-0.10	0.01	-0.01	0.04

df=118, * $P < .01$, MO – Meaning Orientation, RO – Reproducing Orientation, AO – Achieving Orientation, S & P – Styles and Pathologies of Teaching Strategy.

Table-2: Correlations among Teachers' Demographic Variables, Attributes, Students' Psychological Differentiation and Academic Achievement

Teachers' variable	Educational Qualification	Experience	Income	Age	Expectation	Competency	MO	RO	AO	S & P
Students' Dimension										
Psychological Differentiation	0.01	-0.03	0.15	-0.12	0.01	0.24**	0.20*	0.12	0.08	0.10
Academic Achievement	0.02	-0.15	0.14	-0.04	0.41**	0.27**	0.25*	-0.08	0.16	0.12

df=118, * $P < .05$, ** $P < .01$, MO – Meaning Orientation, RO – Reproducing Orientation, AO – Achieving Orientation, S & P – Styles and Pathologies of Teaching Strategy.

Similarly academic achievement of students has significant positive relationship with teachers' expectation, competency and adoption of meaning orientation approach.

Discussion

Contrary to earlier findings and implications (Debnath, 1971; Jangira, 1972), teachers' educational qualification is not significantly related to their expectation, competency, and teaching approaches (Table 1). Thus, prescribing of higher educational qualifications in primary education does not seem to be justified.

Teachers' experience also has no significant correlation with their expectation, competency and teaching strategy. This contradicts the findings of many researchers (Ryans, 1951; Saxena, 1968; Debnath, 1971; Mehta, 1972; Veeraraghavan and Bhattacharya, 1989). On the other hand, with respect to teachers' experience, the

more the experience, the lower the expectations, competency and teaching strategy as all correlation values (r) are negative.

Teachers' income is one variable, which has a positive and significant correlation with expectations, competence and adoption of meaning orientation strategy. Result corroborates the findings of Johnson (1958); Verma (1962); Dave (1967); Ryans (1969); Debnath (1971); Mehta (1972) and Khanuja (1973). However, it contradicts the findings of Saxena (1968). Thus, teachers who are economically well off, either because of wife's job or inherited property, including cultivable lands, have higher expectations, are more competent and adopt meaning orientation approach in teaching. On the other hand, teachers' adoption of reproducing orientation, achieving orientation and styles and pathology of teaching approaches are independent of teaching income.

A significant but negative correlation is found between teachers' age and their expectations, indicating that older teachers have lower expectations from schools, self and colleagues, parents, and students. Moreover, teachers' age has no significant relationship with their competence and adoption of specific teaching strategy. Thus, the results do not support the earlier findings of Dale (1967), Ryans (1969) and Veeraraghavan and Bhattacharya (1989).

Analysis of teacher student data (Table 2) reveals no significant relationship among teachers' demographic characteristics and students' cognitive dimensions indicating that psychological differentiation and academic achievement of teachers' demographic characteristics. Result, thus, contradicts the findings of Ponder (1977) and Winsor (1978) where teachers' qualification positively correlated with students' academic achievement. Interestingly students' psychological differentiation positively correlated with teachers' attributes like competency and their use of meaning orientation strategy. The result thus, supports the findings of Ryans (1969), Bhogoliwal (1968), and Veeraraghavan and Samal (1988). The other striking finding is the positive relationship between students' academic achievement and teachers' expectation, competency and adoption of meaning orientation approach. Positive relationship between teachers' expectation and students' achievement has found support in researches by Rosenthal and Jacobson (1968) and others like, Cooper (1983) and Clifton & Bulcock (1987). However, positive relationship between students academic achievement and teachers' adoption of meaning orientation approach received indirect support from the findings of Marton & Saljo (1976), Pask (1976) and Entwistle and Ramsden (1983) and Ramsden (1983) where, it is reported that students' meaning orientation approach to learning enhanced their academic achievement.

Thus, the research findings seem to have far reaching academic implications like while recruiting teachers for primary schools, higher qualification may not be a criterion as it does not lead to better academic output of the students. Special care may be taken to select fresh and young teachers as they make teaching more effective with their competence and adoption of meaning orientation teaching strategy. Pay revisions from time to time with additional benefits for health and housing will strengthen the economy of the teachers and it may in turn further enhance their teaching effectiveness. Teacher's level of competence may be increased and use of meaning

orientation approach to teaching may be emphasized through periodic refresher and orientation courses, as both contribute substantially to the growth of students' cognitive dimensions like psychological differentiation and academic achievement. Moreover, an enhancement in the level of overall expectations of the teachers may enhance students' academic achievement in a dramatic manner.

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Emotional Integration in Jawahar Navodayavidyalayas

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Abstract

A nation cannot progress and prosper unless it is united. The unity of a nation is generally found in the will of the students who consider themselves as one and united. National integration implies emotional integration, which is in general, considered as “a feeling of oneness, brotherhood and patriotism”. Such a feeling may exist as a result of, or may be created by a variety of circumstances such as residence within a geographical area fixed by nature or long tradition or both, the community or race, language and culture. One of the broad objectives of Navodaya Vidyalaya Samiti is to promote the spirit of emotional integration among the students through the scheme of migration of students from Hindi speaking area to non-Hindi speaking area.

The National Policy on Education 1986 envisaged the setting up of residential Vidyalayas to be called Jawahar Navodaya Vidyalayas (JNVs), one in each district in the country, during the Seventh Five Year Plan. Jawahar Navodaya Vidyalayas are run by the Navodaya Vidyalaya Samiti, an autonomous organization under the Ministry of Human Resource Development, Department of Education. The Minister of HRD is the Chairman of the Samiti. Starting with 2 JNVs in 1986, the NVs in 2006 are 530. The main objectives of Navodaya Vidyalaya Scheme are:

To provide good quality modern education including a strong component of culture, values, environment awareness and physical education to talented children in rural areas, without regard to their socioeconomic condition.

To ensure that all students of Navodaya Vidyalayas attain a reasonable level of competence in three languages as envisaged in the three-language formula.

To serve as a focal point in each district for improvement in the quality of school education through sharing of experiences and facilities.

In keeping with these objectives of providing progressive and forward looking school system in the rural area, Navodaya Vidyalaya Scheme (NVs)

provides education to talented rural children, especially children of SC and ST communities and girl children. Jawahar Navodaya Vidyalayas are fully residential coeducational institutions, providing education up to the senior secondary state. Education in Jawahar Navodaya Vidyalaya including boarding and lodging, textbooks, uniform etc. is free for all students.

One of the important features of the Jawahar Navodaya Vidyalayas is a scheme of exchange of students from one JNV in a particular linguistic region to another. According to the scheme of migration, 30% of the students from the JNV migrate to another at class IX level. The migration takes place between Hindi and non-Hindi speaking areas for one year to promote the spirit of emotional integration. However, the experience was not encouraging and the Navodaya Vidyalaya Samiti was forced to reduce the period of migration from 4 years to 2 years and now from two years to one years.

Objectives of the Study

To study the attitude of students, teachers and principals towards emotional integration through the scheme of migration of students

To find the difference, if any, in the attitudes of students and teachers towards the emotional integration.

Hypothesis

There exists no significant difference of opinion between the students and teachers towards emotional integration through the scheme of migration of students.

Method

Descriptive survey method was used in the present study. The stratified random sample techniques were used to select 216 students, 162 teachers and 27 principals from Jawahar Vidyalayas in Maharashtra and Andhra Pradesh. Fifteen experts including senior officers and resource persons working in Navodaya Vidyalaya Samiti were interviewed. All Vidyalayas were affiliated to CBSE and were following the same curriculum. The tools used for the study were opinionnaire for students and teachers, questionnaire for principals and interview schedule for experts. Statistical techniques like chi-square and percentage were used to analyze the data.

Table-1: The Problematic Students are selected for Migration

Category	Students			Teachers		
	Observed frequency	Expected frequency	Chi-Square	Observed frequency	Expected frequency	Chi-Square
Strongly Agree	18	43.20	14.70	17	32.40	7.32
Agree	26	43.20	6.84	24	32.40	2.17
Undecided	3	43.20	37.40	15	32.40	9.34

Disagree	88	43.20	46.45	63	32.40	28.90
Strongly Disagree	81	43.20	33.07	43	32.40	3.46
Obtained chi-square = 138.49				Obtained chi-square = 51.20		

From the above table it is observed that the obtained chi-squares are more than the table value of the chi-square at 6 df and 0.05 level of significance. Therefore the null hypothesis is rejected in both cases. 78.25% of the students and 65.43% of the teachers feel that only unwanted and problematic students are selected for migration.

Table-2: The Students Who Migrated Forcefully

Category	Students			Teachers		
	Observed frequency	Expected frequency	Chi-Square	Observed frequency	Expected frequency	Chi-Square
Strongly Agree	10	43.20	25.51	15	32.40	9.34
Agree	28	43.20	5.34	56	32.40	17.19
Undecided	9	43.20	27.07	11	32.40	14.13
Disagree	93	43.20	67.00	57	32.40	18.67
Strongly Disagree	72	43.20	19.20	23	32.40	2.72
Obtained chi-square = 144.13				Obtained chi-square = 62.07		

From the above table it is observed that the obtained chi-squares are more than the table value of the chi-square at 6 df & 0.05 level of significance. Therefore the null hypothesis is rejected in both cases. 78.24% of the students and 49.39% of the teachers feel that the students were made to migrate forcefully.

Table-3: The Migrated Children Get a Lot of Chance to Know the Culture of Each Other

Category	Students			Teachers		
	Observed frequency	Expected frequency	Chi-Square	Observed frequency	Expected frequency	Chi-Square
Strongly Agree	114	43.20	116.03	40	32.40	1.78
Agree	59	43.20	5.77	90	32.40	102.40
Undecided	1	43.20	4.22	4	32.40	24.89
Disagree	31	43.20	3.44	18	32.40	6.40

Strongly Disagree	11	43.20	24.00	10	32.40	15.48
Obtained chi-square = 190.40				Obtained chi-square = 150.96		

From the above table it is observed that the chi-squares are more than the table value of the chi-square at 6 df & 0.05 level of significance. Therefore the Null Hypothesis is rejected in both cases. 80.25% of the teachers feel that the migrated students get a lot of chance to know the culture of each other.

From table-4 it is observed that the obtained chi-squares are more than the table value of the chi-square at 6 df & 0.05 level of significance. Therefore the Null Hypothesis is rejected in both cases. 88.43% of the students and 84.57% teachers feel that students learn the true sportsman spirit through daily games and sports activities.

Conclusion and Suggestions

On the basis of the results drawn and discussions with the principals of Jawahar Navodaya Vidyalayas the following conclusion and suggestions are made for further necessary action.

Navodaya Vidyalaya are successfully promoting emotional integration through migration of students from Hindi to non-Hindi speaking areas and vice-versa.

During the period of migration, students get an opportunity to see and study the lifestyle, food habits and culture of people of other States.

The selection of the students for migration is being done by taking willingness of students into consideration or by drawing lots very carefully as per the guidelines issued by Navodaya Vidyalaya Samiti.

Also the migrated students develop closeness after their visit to the local friends.

Suggestions

Provision should be made for movement of teachers from one JNV to another, throughout the country along with the students. Study tours and educational excursions should be encouraged in all Vidyalayas.

General educational course, what may be called foundation course, may be provided in the JNVs with particular emphasis on scientific, humanistic, artistic and social attitudes conducive to the development of national unity and integrity.

Migration should be at Class VIII instead of IX.

Link Vidyalaya for migration should be changed after every five years.

Migration should take place between Navodaya Vidyalaya having similar facilities.

The duration of migration should be for two years instead of one year.

Table-4: The Students Learn the True Sportsman Spirit through their Daily Games and Sports Activities

Category	Students			Teachers		
	Observed frequency	Expected frequency	Chi-Square	Observed frequency	Expected frequency	Chi-Square
Strongly Agree	110	43.20	103.293	049	32.40	008.505
Agree	081	43.20	033.075	088	32.40	095.412
Undecided	002	43.20	039.293	012	32.40	012.844
Disagree	010	43.20	025.515	010	32.40	015.486
Strongly Disagree	013	43.20	021.112	003	32.40	026.678
Obtained chi-square = 222.2871				Obtained chi-square = 158.9259		

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Examine the Diverse Theories of Attitude Development

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Abstract

In general, theories play an important role in guiding research. The attention is focussed on questions of importance in understanding and predicting the behaviour of interest. A lot of research has been conducted on the development of attitudes in children. Such research has generally been guided by an interest in describing variations in children's attitudes as a function of age level in regard to specific issues, such as racial prejudice. Findings from these descriptions are sometimes utilized to help generate theories about the development of specific attitudes. Therefore, there exists a number of theories concerning the development of racial prejudice, sex-role attitudes, and others. A single comprehensive theory of the emergence and change of attitudes in children has yet to emerge from the specific subtheories concerning particular kinds of attitudes. However, two major approaches to questions of general attitude development do exist and can be distinguished. One approach emphasizes experimental factors occurring during socialization, and the other emphasizes ontological or maturational factors as primary determinants of change during the course of attitude development. Attempts have been made towards integrating these two perspectives into an overall theory of attitude development. Such an effort is confronted with the necessity of describing the complex interactions which occur between experimental and maturational factors and which strongly influence the development of attitudes.

Socialization Theory

Social learning theorists emphasize the importance of two key concepts in development, reinforcement and imitation. Skinner (1953) has postulated that in addition to primary reinforcers, such as food and water, certain social stimuli, such as affection, attention, and approval, can take on reinforcing properties and can shape behaviour in the developing child. However, as Bandura and Walters (1963) have argued, selective reinforcement, whether social or nonsocial is too inefficient and time

consuming to explain the vast behavioural repertoire achieved by children. They argue that the establishment of novel behaviour can be achieved much more rapidly and effectively by the process of Imitation of modelling, suggesting that children acquire most new behaviours by imitating others, primarily their parents, at early age levels. Such type of behaviour is then maintained or extinguished by selective reinforcement considering these processes in regard to the development of attitudes young children would be expected to imitate the attitudinal statements of their parents, of television programmes, or of numerous other sources. If an attitude statement from one of these sources is acceptable or valued by the parent, then reinforcement in the form of approval and attention is likely to be forthcoming, thus increasing the likelihood that the attitudinal statement 'will be repeated. On the other hand, repetition of an unacceptable attitudinal statement is likely to result in negative reinforcement or punishment, and a consequent decline in the likelihood of further repetition.

The principles of imitation and reinforcement can account for the initial acquisition of attitudes. However, it is also important to understand how such attitudes are internalized, that is, how the child accepts an attitude, originally under external control in his or her definition of self, as under internal control.

Two processes are assumed to account for internalization: identification and classical conditioning. Identification implies a process whereby one person adopts the attributes, prohibitions and values of another particularly salient person. Although it is closely akin to imitation, the concept of identification has been used in the broader sense. Whereas imitation generally refers to the modeling of particular behavioural responses, identification refers to a broader and more long-term acceptance of attributes associated with the salient other. Young children generally identify with their parents especially their mothers, in traditionally organized households. Thus, while they 'will imitate and subsequently learn attitudinal statements had from many sources, one would expect them to be more likely to incorporate into their belief systems statements made by their parents than those coming from other sources. Hence, the identification process can be seen as one factor determining the selection of attitudes to be internalized.

The majority of theoretically guided research on attitude development has emphasized the role of a variety of variables that influence the socialization process. Such variables are parental attitudes, the child's socio-cultural background, and the influence of mass media, education, and peers in children' a socialization in general and their attitude development in particular.

Theories stressing Cognitive Development

There are less studies in the area of attitude development emphasizing the role of children's cognitive capabilities in the formation of attitudes. This approach was noticed from the work of Piaget (1952), Werner (1948), and others, rests on three basic ontological assumptions (Cairns, 1979). First, the development of cognitive capabilities is assumed to parallel general organismic development and to be governed by analogous principles. Second, it is assumed that cognitive development

progresses from dependence on immediately present sensations and perceptions toward achievement of abstract representations of experience. Thus, the infant is capable of responding only to direct stimulation from the immediate environment, whereas the mature person is also capable of responding to purely internal, mental events. The third and final assumption of this approach is that children's cognitive structure or characteristic ways of viewing the world evolve over the course of development in a series of relatively invariant, hierarchical stages in which each earlier stage forms the basis for the next, more complex stage.

Piaget (1952) postulated two interacting processes to account for the child's transition from stage to stage: assimilation and accommodation. Assimilation refers to the incorporation of new experiences into existing cognitive structures. Accommodation to the progressive reorganization of the structures themselves which occur when such new information is introduced into the system.

Although both ontological and experiential factors are noticed as important determinants of cognitive growth, Piaget (1952) and others tend to emphasize the parallels between cognitive and biological development to the relative neglect of the role of social learning in the transition from simpler to more complex levels of cognitive functioning. While no comparable stage theory of attitude development has yet been advanced, some work has assessed the relationship between children's stages of cognitive development and their attitudes toward specific issues [e.g. Kohlberg's (1969) theory of moral development].

Integration of Maturational and Experiential Factors

Research on attitude development, as exemplified in the work of Williams and Morland (1976) focusses on the interaction between cognitive and experiential factors. Theoretical bases for such an approach are illustrated in Jones and Gerard's (1967) discussion of the formation of attitudes. They have described two important aspects of parent-child interaction: information dependence and affect dependence. Young children are dependent on their parents for information about the world. Since parents are the early suppliers of information, the way in which it is presented influences the substance of child's thinking and has important consequences for the course of their mental development. Children also depend on their parents to come across their physical and emotional needs - affect dependence.

The way of categorizing persons, objects, and ideas suggested by parental provision of information is a crucial determinant of the child's later thinking patterns. Thus the consequence of early information and affect dependence is a complex interaction between children's maturing cognitive abilities and their learning experiences in forming their attitudes.

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Religion: Its Connotation

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The word religion is derived from the Latin religare, to bind. What binds, whom does it bind, and why? The only practical answer is that religion binds us by rules, laws, injunctions, in order that we may not degenerate, that we may not have pain, misery, mental and spiritual sufferings. The term religion is one of those few with which the more we are familiar the more do we have confused notions about it. This is inevitable because of the very complexity of the idea of religion. As religion passes through many stages of its evolution and man's knowledge of God develops concurrently with growth in the consciousness of himself and of the world step by step, it may be interpreted differently by different people and in various epochs of civilization.

Writers who conceptualize religion in a broadly inclusive way define it variously as "the collective expression of human values", as "the zealous and devout pursuit of an objective", or as "system of values or preferences - an inferential value system". Such definitions are so broad that they encompass not only the belief systems of Christianity, Hinduism and Islam but also those of communism, democracy, logical positivism, and even anarchism. Other writers place far greater limitations on the term religion, proposing that a conceptual scheme qualifying as religion must be an integrated system of specified components, including the nature of a supreme being or of gods (theology), the origin and condition of the universe (cosmology), rules governing human relations (ethics, morals), the proper behaviour of people toward superhuman powers (rites, rituals, worship), the nature of knowledge and its proper sources (epistemology), and the goal of life (teleology). Under this second sort of definition, Christianity, Hinduism and Islam are religions but communism, democracy, logical positivism, and anarchism are not.

Religion is a bewilderingly complex and multi-sided experience and it is liable, therefore, to partial and incomplete conceptions about the nature and constitution of it. All comprehensive and unique as it is, religion is a very difficult term to define. It is a principle of logic that the term of the widest scope cannot be defined. Pratt (1956) refers to the forty eight definitions found in J.H. Leuba's *A Psychological Study of Religion* to which Widgery's (1953) ten more might be added, we may get at some working knowledge of what we mean by religion if we look for common elements in all religions which are religions in the true sense of the term. In all the religions the term Religion stands for something supernatural. It has for its object, something that belongs neither to the human nor to the mundane order. Even the primitive mind

developed a respect to the power and powers only when he knew it to be different from the order to which he belonged.

The term 'religion' has been defined and interpreted by various thinkers in different ways. Literally it may be defined as a source for the welfare of living creatures and etymologically it means something that helps to bind man to man. Man is potentially divine and to manifest and express this divinity or perfection through our actions collectively is to follow Dharma or religion. Religion explains the way of leading life in a bond of relationship and love.

Religion is the most complex aspect of human nature, which is also shaped and moulded by many other conditions and circumstances of man's secular life (Vidyarthi, 1977). Progress in the different branches of science, the discovery of the laws of nature and the unfoldment of the hidden secrets of the natural phenomena continue to throw new light on it and transform our old opinions about the nature and constitution of the world. The religious man has the responsibility to coordinate his progress in all the fields of knowledge with his fundamental assumptions and beliefs which constitute for him the religious interpretation of reality and also determine his conduct and his relationship with his fellow-men.

Any definition or understanding of religion must involve primary incontrovertible principle of the transcendent designated by us God. But the seeming contradiction between the acceptance of the existence of God and the recognition of religions without God as religions in the genuine sense of the term is such that we may be compelled either to dispense with any endeavour to explain the nature and content of religion by reference primarily to the God existence, or we may not think atheistic forms of it to be religion in the original sense of the term. The meaning of religion, etymologically, is the force which binds us to something greater than ourselves. That this belief in the existence of God is the common element even in primitive religions has been pointed out by many anthropologists. Taking into account the prodigious variety and complexity of the forms of religion which do not stand on the same level, it is really a tremendous task for us to define or understand it. It is not possible to define it in neat and clear terms because it is so comprehensive in nature that it excludes nothing, whereas for a logical definition a certain measure of exclusion is essential. We must not forget that it is a very complex phenomenon which has a connotation which includes many things, and that consequently for this reason each of the elements involved in it, just because in one way or another it directly or indirectly contributes to the total effect of the whole process, may be called religion.

Theism is the most perfect form of religion, (Vidyarthi, 1977). There is no meaning in postulating a spiritual principle for religious consciousness which only intelligence can understand, but which does not meet the needs of our emotional and practical life. That which take to be spiritual in the true sense of the term, not only silences our enquiries, but also brings about consistency and harmony in our emotional and practical life. All these interests are treated important, and nothing which falls short of being adequate to any of these aspects of our experience can be spiritual in the true sense of the term. The Upanishads, in recognition of this inevitable requirement of human nature, do not merely feel impelled to believe in the infinite or Brahman as- something vague and indefinite, but as one whose conception

is and who is spiritual in character possessing a personality characterized by intelligence, feeling and will. They are not tired of emphasizing that Brahman possesses 'Sat', 'Chit' and 'Ananda' as three chief marks of His Being. Evidently, the thinkers of the Upanishads, in thus characterising Brahman, insist that Brahman is not an object merely of theoretical enquiry and investigation but also that which can put an end to all our intellectual riddles and confusions and introduce harmony into our emotional and practical life. The seers of the Upanishad have the unmistakable experience of the presence in their consciousness of a being who permeates and pervades our life through and through, gives a sense of purpose and direction to our will, brings about integration and harmony in our emotions and passions, lifts us above the evanescent, transitory and finite ends and values of life, and impels us always to abide permanently in the eternal in which alone one can find everlasting peace and felicity. Chandogya Upanishad in 1890 echoes, "That which is the, infinite is alone bliss; there is no happiness in the finite; the Infinite alone is worthy of investigation". Man's sense of eternal values issues from his inwardization. Man turns his gaze inwards, "Religion as the means of attainment of Supreme Value is the result of inwardization" (Brhadaranyaka Upanishad, 1891). It is just to this feeling that St. Augustine gave triumphant utterance "Thou hast created us for thyself and our heart cannot be quieted till it may find repose in Thee" (Muller, 1899).

Some conflicting views about the meaning of religion are given by Radhakrishnan (1968). "The problem of religion arises from the realization of the imperfect condition of man. Life is not merely a physical phenomenon or biological process, who shall save me from the body of this death, from the snares and dangers of this world? The need for redemption implies the presence of conditions and circumstances from which we seek redemption. It is a life of realization a gnosis, an inner intuitive vision of God, when man achieves absolute freedom and escapes from the blind servitude to ordinary experience. It is a subtle interwovenness with the realization of the spiritual world. It is not knowledge or recognition of universal ideas through a dialectical process or analysis of empirical data" (Radhakrishnan, 1968). Thus according to him religious truth depends upon the intuitive experience of the individual who reveals it to the world in human language as far as possible. According to Radhakrishnan (1956), "Religion which springs from the radical insufficiency of human nature is an instinct with us which surely we cannot shake off". He further writes in an idealist view of life (Radhakrishnan, 1951), "Man's inability to achieve perfect contentment in the finite, his unquenchable longing for consummate happiness may be taken as indicative of his supernatural destiny. In fact, there is nothing else but religion which transfigures the whole personality of man, his thought, feeling and action. Religion is the ultimate attitude of thought, feeling and will to God or the ultimate reality. It is by religion that man is able to create harmony in himself and produce harmony in the universe and establish harmonious relationships with his fellowmen. In the words of Radhakrishnan (1956), "He is a religious animal. The sense of the ideal, of the vision of the beyond is already within him. Man's love for eternal values is itself eternal".

Religion is the manifestation of the divinity already in man. Religion is the realisation of the eternal soul and the eternal God. Tagore (1949) observes, "All human qualities find their suggestion in God". Man has two selves - the higher and

the lower. The lower self is one's ego, the higher self is a portion of God. When the lower self of man is controlled and guided by one's higher self, one realizes God. Egoism and our desires limit the scope of our self-realization. Tagore says "The desire at once puts out the light from lamp it touches with its breath. It is unholy - take not thy gifts through its unclean hands. Accept only what is offered by sacred love" (Tagore, 1962). Religion is an application of the theoretical principles of metaphysics to the practical sphere and is an instinct. Religion like metaphysics, exercises its powerful hold, consciously or unconsciously even on the mind of the average man.

Guru Nanak who was a religious man gave us what he experienced in his own soul in as clear a language as possible. According to him, "Religion is not mere intellectual conformity or ceremonial piety. It is a spiritual adventure. It is not theology but practice" (Singh, 1979). Tagore (1949) puts it, "He is not satisfied with what he is in his natural limitations, he irresistibly feels something beyond the evident fact of himself which only could give him worth".

Religion has always been the inexhaustible source of man's deepest passions and highest aspirations. Religion can direct man's mind to the values and ends of life. According to Spiers (1962) Hegel remarked, "All that has worth and dignity for man, all wherein he seeks his happiness, his glory, and his pride, finds its ultimate centre in religion, in the thought, the consciousness, and the feeling of God. Thus God is the beginning of all things and the end of all things. As all things proceed from this point, so all return back to it again. He is the centre which gives life and quickening to all things and which animates and preserves in existence all the various forms of being. In religion man places himself in a relation to this centre, in which all other relations concentrate themselves and in so doing he rises up to the highest level of consciousness and to the region which is free from relation to what is other than itself.

Religion adds new dimensions to man's creative ideas and living ideals. It transfigures the whole man and has awakened the savage and the civilized alike to the inspiring ideals of human life and has proved itself the unfailing bonds of unity, harmony, friendship and fellowship between individuals and nations, the rich and the poor, the high and the low, the saint and the sinner.

Bhagvadgita brings home to our minds how religion is intelligible in terms of the values. It tells us that religion is the means of the realization of the highest value that value, the attainment of which sets at naught every other value for in some way or other, they all culminate in it and are fulfilled in it. According to Bradley (1930), man must desire to think about and comprehend reality and consequently, must entertain a definite attitude to the universe and life which can be called religious.

Some believe that religion is deeply rooted in man's volition, in his feelings and emotions. In the words of Paulson (1912), "Feelings of humility, reverence, yearnings after perfection, with which his heart is inspired by the contemplation of nature and history, determine his attitude to reality. Out of these feelings arises the trust that the world is not a meaningless play of blind forces but the revelation his own inherent essence". Gandhi (1944) writes, "The secret of a good and great being whom he may acknowledge as akin to of my serenity and joyfulness consists in my utter reliance on God, that is my immovable faith in truth".

Religion for the last several decades has emphasized radical differences between

the East and the West to such an extent that a rapprochement of the eastern and western ideals of religion and human conduct is considered to be impossible. It is customary to hold that such notions as those of personality, the freedom and independence of the individual, the reality of the world, the idea of God as the principle not only of supreme perfect intelligence but also of righteous will are alien to the eastern religious outlook and therefore it is adherence of the west to these doctrines that divides it from the east in the matter of religion. Schweitzer (1961a) who concedes that the religion of the vedic hymns is of a world and life-affirming nature and contains ethical elements and that in vedic hymns also monotheistic tendencies assert contends that "the Indian world view differs from the western view in that whereas the former is moniastic, the latter is dualistic and doctrinaire" (Schweitzer, 1961b).

In the matter of man's relationship with the ultimate power in the world, all agree that it is a unity, that God is one. The Christian emphasis on the lovable quality of God is not matched in all of the other religions. In Judaic and Islamic literature the notion of a loving God is tampered by emphasis on the justice of God, which tends to make Him fear. Buddhism places less emphasis on the personal qualities of God than any others. But all agree that God is one, the primal and unifying principle or power in the universe.

All the religions of the world are alike in insisting that the highest purpose for man is to strive for the perfection in mind and character that is represented by the Godhead, though they may differ in their emphases on the qualities that should have priority. The common colour that identifies the lives guided by religion is purpose, and within the context of society the common purpose is the good of one's fellow men. The supporter of socialistic view point are also of the opinion that individual must serve the society in the best possible way by considering each member as the image of the spirit.

According to Reid (1962) religion is a conscious relation of man to that supreme centre of intelligence and will which permeates and pervades every side of our being, our entire intellectual, moral and spiritual life. "The setting of religious knowledge is a total life of experience, sometimes dark, sometimes illuminated meeting of a 'Thou', a receiving, responding, contemplating questioning, doubting, affirming, rejecting, assenting, resisting, an agony and joy of involvement. No words are adequate to its complexity, for it is human life in infinite engagements, and each biography has its own individual story. What is Important to recognize is that religious 'knowledge' is but one of the functions or facets of religious life affecting and affected by all of it.

The anthropological interpretation of religion has now put forward the view that religion arose from questions concerning the emotional and practical sides of human experience rather than from those concerning the origin of the world. Long before man began to think about himself and about the world, he had already accepted the existence of God as the sovereign, supernatural power pervading all the events and phenomena of nature, and it can be said his belief in God was anchored in his religious experience and, it was not the outcome of an attempt on his part at a reflective exercise of his reason (Vidyarthi 1977).

In so far as religion is a theory of life and is based on a metaphysic or a doctrine of reality resulting from a critical analysis and understanding of human experience, the role that reason plays in it cannot be underestimated. Belief in God has r some factual basis, it is something which affects man unconscious when he observes the vast expanse of the, sky above and the plains and mountains below, yet when he reflects upon how he knows them and on the many kindred/tedious problems that confront him, he is led to the conclusion that God as the Supreme Mind also can be the final answer to all his theoretical questions and enigmas that arise from his intercourse with the world. But religion is not mere information, it is orientation too. If were mere information, there would be nothing to distinguish it from science. It would have nothing to do with human personality which has always to be kept aside in the course of any attempt directed to an objective knowledge of things given in the spatio-temporal order.

The foregoing discussion leads us to conclude that it is the total orientation of man to the Supreme Reality that is the subject of any interpretation of religion

Religion cannot lie simply in getting rid of something, such as 'pain' but it must also lie in getting hold of something else. According to Yogananda (1979), "Religion consists not only in the avoidance of pain and suffering, but also in the attainment of Bliss or God." Whenever we forget our true end - the attainment of Bliss of the state, condition, or mode of living eventually leading to it and direct our sole attention to the things which are mistakenly thought to be the means or conditions of Bliss and turn them into ends; our wants, desires excitations go on increasing, and we receive misery or pain. Desire is the root of all misery, which arises out of the sense of identification of the "self" with mind and body. Bliss is a consciousness of perfect tranquility. The man who has attained Bliss feels that he is passing through a pain-pleasure universe with which his realty has no connection. Every human being is seeking to attain Bliss by fulfilling desire, but he mistakenly stops at pleasure, and so his desires never end, and he is swept away into whirlpool of pain. The blissful state has been described as our universal aim and the highest necessity, because in this stage we are really conscious of God or Bliss, and feel the expansion of our real selves. Religion is really nothing but the merging of our individuality in universality.

Aphorisms are tabloids, summarizing in concise statements sons principle or law. The Yoga Sutras or aphorisms of the sage Patanjali are tabloids of truth (Yogananda, 1976). Of the six principal systems of Hindu philosophy (Yoga, Vedanta, Sankhya, Mimamsa, Laya, Vaisesika). Sankhya expounds the why of religion, Vedanta describes the end to be attained, and Yoga provides the method for that attainment. These concepts together constitute true religion, whose two-fold purpose is to show man how to avoid suffering and how to contact the bliss of the Supreme One: that lasting happiness which is not conditioned by either painful or pleasant experiences. Thus religion has two phases. Sankhya philosophy deals with the first phase, pointing out that the primary goal of everyone is the avoidance of spiritual and physical suffering. The state of painlessness is to some extent agreeable, but is not itself happiness producing. To attain the truth and everlasting happiness which Vedanta describes, as the end or second phase of religion, a full understanding and application of the principles of religion are necessary. This is Yoga.

According to Vidyarthi (1977) reason is involved in religion. It will not be quite a correct estimate of the religious consciousness to hold that man is religious only because he is self-conscious or because he is merely an intellectual. It would be more correct to say that man is rational and religion is a manifestation of his reason. Intellect is only a part of the exercise of his reason, knowledge expresses itself more in emotions and action than in the powers of thinking, analysis, interpretation and understanding. And when it does so, to find their unity in a higher synthesis, it makes man transcend the opposition of mind and matter, the subject and the object, to find their unity in a higher synthesis. But religion is not purely an intellectual preoccupation. It is not for intellectual equipment, scholarship, powers of keen analysis and keen understanding that we respect a religious man. The high esteem and honour the religious man commands are due mainly to the kind of man he is, that is to say, the harmonious and balanced perfection of all his mental and spiritual powers which constitute his personality.

According to Yogananda (1980) theological and even scriptural answers to certain questions could never fully satisfy a soul, unless their truth were experienced through realization and God-communion. Yogananda (1973) says, "You hear about God in churches and temples; you can read about Him in books; but you can experience God only through self-realization attained by practising definite scientific techniques".

Religion can be made scientific by Yoga. Yoga means union of soul and God, through step-by-step methods with specific and known results. It raises the practice of religion above the difference of dogma (Yogananda, 1975).

Meditation is the true practice of religion serving as a scientific tool, in analogy, to the microscopes which allow us to observe the nature and other physical phenomena at microlevel. Meditation is to sit still with a deep concentration and experience God. But if one does not get to that point of intensity as envisaged by seers, the concentration may not be enough to attain the Bliss. Yogananda (1975) says, "With deeper concentration and devotion, you will see after a little while that you have forgotten all distractions; before your inward gaze a light appears, or you are engulfed in a deep peace or divine joy.

According to Vivekananda (1978), concentration is the essence of all knowledge; nothing can be done without it. When mind is concentrated and turned backward on itself, all within us will be our servants, not our masters. The Greeks applied their concentration to the external world, and the result was perfection in art, literature, etc. The Hindu concentrated on the internal world, upon the unseen realms in the self and developed the science of Yoga. Yoga is controlling the senses, will and mind. The benefit of its study is that we learn to control instead of being controlled.

Concentration is restraining the mind into smaller and smaller limits. There are eight processes for thus restraining the mind as envisaged by Vivekananda (1977). The first is "Yama", controlling the mind by avoiding externals (temptations derived from senses). Second, is "Niyama", not allowing the mind to wander in any direction. Third, is "Asana" posture. Fourth, is "Pranayama", restraint of breath. Fifth is "Pratyahara", drawing in of the organs from their objects. Sixth, is "Dharma", concentration. Seventh, is "Dhyana" contemplation or meditation (This is the Kernel of the Yoga system). And lastly, "Samadhi", superconsciousness. The purer the body

and mind, the quicker the desired result will be obtained; every Indian saint has firm belief on this statement.

Man can reach the superconscious state with constant practice and non-attachment to the world. Superconsciousness is a state which can only be experienced and felt. This is the stage where one is aware of blissful, sensitive, subtle and elevated state. According to Surath (1973), "Samadhi" the superconsciousness is a state and a process arrived at through intense discipline and long practice of concentration of mind arid through some prescribed method wherein cells develop and mature to realize and absorb the subtlest Divine grace and Divine force. This state comes only after the culmination and consummation of all states of concentrated mind have been achieved. Out of this concentrated mind there emerges a new vista which vedantists call "Ananda" and Budhists call "Sama Patti" enthroned in the profoundest and subtlest wisdom. To attain this stage is the true religion of a person.

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