

# EFFECTIVE STAKEHOLDER PARTICIPATION IN REQUIREMENT ENGINEERING USING WIKI-BASED PROCESS FRAMEWORK

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## ABSTRACT

Requirement Elicitation (RE) and documentation are complex activities of Requirement Engineering Process. Numbers of requirement engineering tools are used to perform both activities. Communication gap exists among stakeholders especially when stakeholders are diverse. Effective participation of stakeholders in a project causes to improve the quality of requirement products. There are certain factors which makes the participation of stockholders more effective in Wikis.

## INTRODUCTION

The main purpose for the software systems success is mainly concern with software engineering process and to identifying the stakeholders and their needs. Requirement engineering (RE) is Software Engineering (SE) branch related with objectives, functions and constraints on the software systems. In fact it is not possible for software system to perform functionality in isolation from the embedded system so requirement engineering encompasses both system as well software (Hoffman, 2001). Requirement Engineering is a mechanism used for identifying and specifying the client's requirements in addition it also provides a convenient way to these requirements for effective communication among various stakeholders. RE is:

1. Elicitation (or Capturing) of requirements,
2. Modeling and analyzing of requirements
3. Propagation of requirements
4. Acceptance of requirements
5. Requirements evolution.

Stakeholders are individuals/clients/customers/developers/users/ participants or organizations/firms/companies who is directly effected in terms of gain or loss from the system success or failure (El Emam *et al.*, 1996).

In a project stakeholder plays an important role in requirement elicitation and documentation. Different type of stakeholders helps in requirement engineering in different ways (Dacker *et al.*, 2007). There are many challenges in participation of

stakeholders in requirement engineering.

1. Each stakeholder has his/her own perspectives.
2. The background of stakeholders are different
3. The objectives of stakeholders are different.
4. Each stakeholder express requirements and documentation in different way.
5. Each stakeholder is authorizing in different way.

The communication among stakeholders may be synchronous (i.e. face-to-face meeting and video conferencing) and asynchronous (Wiki-base). Wikipedia is one of the most frequently visited online encyclopedias among Internet users that completely manipulated through user contributions (Louridas, 2006).

Because of Wikipedia's distinct principles and unique style of presentation, its looks and feels is entirely different from the conventional encyclopedias. As stated in alexa.com (web site for monitoring web traffic) "Wikipedia ranked among top 20 most visited web sites in 2006". Wikipedia was owned by Wikimedia foundation (non profit group established in 2003) in 2006. Since then Wikimedia is monitoring all the

functionality of Wikipedia. According to a well known Wikipedia Wiki is consider as a flexible platform for asynchronous collaboration (Cubric, 2007).

## 2. Requirement Engineering Tools

Several studies shows the use of different software engineering tool, used by stakeholders in requirement elicitation and documentation such as office text/suite docs and commonly used collaborative tools and Dedicated RE tools (Nikula *et al.*, 2000). These tools provide certain features such as storage of requirements, sections wise structuring of requirements, version support and establishment of requirements used for base lining and help in other development phases (i.e. testing). Some common drawbacks of these tools are un-typed links, distribution of requirements, implicit versioning and requirements base lining. Among these tools Wikis are considered as more powerful and easy to use tools as compared to office text/suite docs and commonly used collaborative tools and Dedicated RE tools. Wiki's 2 main characteristics are

1. Through Wikis redundancy of each page is reduced.
2. Requirements can be traced easily.

Due to these features a new user can easily learn Wikis. Similarly views of stakeholders are integrated with Wiki tools (Glinz *et al.*, 2007).

### **3. Managing Communication in Wiki:-**

In communication of stakeholders through Wikis a moderator (requirement Engineer/ Project Manager) provides a general structure and template for contributing content (Rech *et al.*, 2006). Based upon the said structure the moderator assigns the requirements to the corresponding stakeholders. By using Wiki new pages can be added on a main home page. All stakeholders must follow the Wiki rules to take decision about requirements. Wiki communication can be over stimulated. Most Wiki provide overviews to support the communication (Decker *et al.*, 2007).

To provide better service to the project, indicators play important role and help moderator to determine about whether changes required in template, existing rules/work assignments and in classification/organization schemes etc. The moderator refers to two things i.e. a stakeholder must familiar about templates changes, classification and work assignment. Second he/she must check the action of stakeholders.

### **4. Wiki-based Requirement Engineering Document Structure.**

The Wiki-based Requirement Engineering document structure can be divided into three parts.

1. Context Part
2. Navigation Part
3. Requirements Documents Part

The main components of the Context part of document structure are:

#### **Project Home Page:-**

A project home page represents project information like mission, links and new peoples.

#### **User Home page:-**

A user home page represents information about people which are involved in project. Through a user home page another stakeholders can contact. Both components have “isA” relationship with its templates. The main component of the Context part of document structure is:

#### **Overview:-**

Overview component makes easy to understand the requirement gathering process to stakeholders. Overview component represent both completed and unfinished requirements. Overview component has “isA” relationship with its template.

The main components of the requirement document part of document structure are

**User Story:-**

System interactions specification is represented by user-story which may include actors and responsible authors.

An Actor defines the roles for a user story. Actor groups documents can be reviewed by stakeholders.

**Use Case:-**

A use case represents the behavior or structure of system which depend on project's needs (Cockburn, 2000).

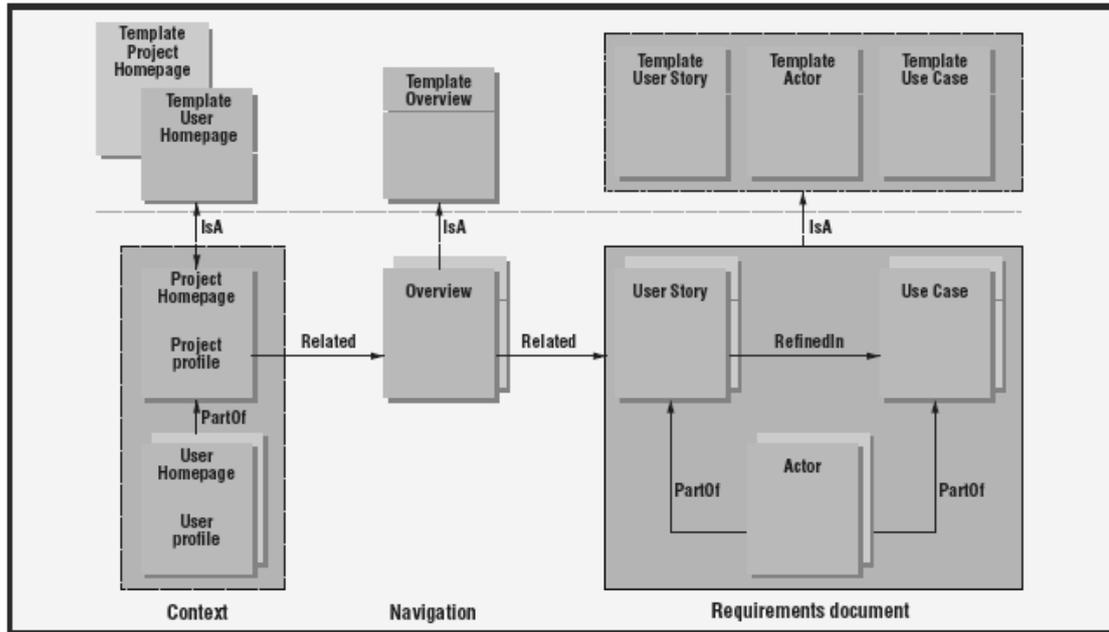
**Actor:-**

Fig-1 Wiki-based R.E basic document structure, Adopted from (Decker et al., 2007)

### 5. Factors of Framework to make effective participation of Stakeholders in Requirement Engineering.

Participation of stockholders can be effective by using following factors which can be implemented through Wiki-based requirement Engineering document.

1. Stakeholders should be enabling for prompt review of recent updates without browser redirecting.

2. All anonymous access should be disabled when a stakeholder wants to trace and evaluate individual contribution (Cubric, 2007).
3. The views of stakeholders should be integrated to remove the communication gap.
4. Stakeholders can trace requirements through page-history.

5. Stakeholders can detect unexpressed conflicts of requirements.
6. Stakeholders can restructure the content.
7. Stakeholder can classify and reclassify the tasks.
8. Stakeholder can work offline.
9. Stakeholders perform versioning on several pages.

## 6. CONCLUSION

In this paper a framework of Wiki-based process is used in Requirement Engineering to improve the quality of requirement products by diminishing the communication gap among stakeholders, and providing an elastic stage for asynchronous collaboration for contents creation. This framework comprises different factors which are implemented through Wikis for effective participation of stakeholders.

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# ANTI OXIDANT LEVEL IN PATIENTS WITH MYOCARDIAL INFARCTION BY USING FRAP METHOD

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## ABSTRACT

Cardiac diseases are the major cause of death especially Ischemic coronary Heart Disease (IHD) of the modern world. In our study the high level of serum in total cholesterol, low density lipoprotein, triglycerides were high and the levels of high density lipoprotein were observed. The mean  $\pm$ SD levels of the cholesterol in patients were 225.19 $\pm$ 49.69 mg/dl, triglyceride 189.73 $\pm$ 73.21 mg/dl, LDL 132.42 $\pm$ 31.12 (mg/dl) respectively. While the serum HDL was low as 36.16 $\pm$ 5.04 (mg/dl) as compared with the normal level. Moreover  $\pm$  SD of vitamin C levels in IHD patients were 333.79 $\pm$ 64.19 ( $\mu$ mol/l), vitamin E levels were estimated as 368.14 $\pm$ 70.8 ( $\mu$ mol/l), While Glutathione reduced (GSH) reported was 1840.9 $\pm$ 354.05 ( $\mu$ mol/l). The study therefore highlights the value of serum antioxidants level in tissue injury due to oxidative stress in daily investigation along with other laboratory tests. The study was conducted in Faculty of Pharmacy during the year 2007-08.

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## INTRODUCTION

It has been observed that myocardial infarction is accompanied by oxidative stress (Himmelfarb and Hakim, 2003) due to increased production of reactive oxygen species and deficiency of antioxidant defense mechanism, may damage biological structures. In Myocardial infarctions the over production of reactive oxygen species are due to inflammation (Locatelli *et al.*, 2003), Malnutrition (Stenvinkel *et al.*, 1999) and presence of endogenous stable

oxidant in the plasma (Roselaar *et al.*, 1995). Old age and diabetes mellitus are other factors for increasing pro-oxidant activity in myocardial infarction (Locatelli *et al.*, 2003). Chronic and acute production of the free radicals leads the oxidative modification of low density lipoproteins. The oxidized LDL is the activator of endothelial cells to initiate surface adhesion molecules most probably the vesicular adhesion molecules-1 (VACM-1) and intra cellular adhesion molecule-1 (ICAM-1)

along with monocyte chemotactic protein-1 (MCP-1) which attract circulating monocytes due to adhere to the endothelium and migrate in to the artery wall (Berliner *et al.*, 1990, Noval *et al.*, 1991). The high level of oxidized LDL is the main cause or risk factor of atherosclerosis.

The atherogenesis may be related with antioxidant molecules by interfering the oxidative process. The defense molecules such as Vitamin C, Vitamin E and Glutathione reduced (GSH) those act as an antioxidant or scavenger of reactive oxygen species may diminished the cumulative effect of oxidative damage.

Therapeutic approaches to reduce oxidative stress in chronic myocardial infarction patient are focused on the reduction of inflammatory cell activation to suppress the inflammatory mediators by use of antioxidants (Wratten *et al.*, 2000). Therefore the vitamin E is the most important molecule that inhibits lipid peroxidation in the presence of vitamin C to protect the cause of cardiovascular disease (Byer & Bowman, 1993).

Present study was focused on the level of Vitamin E, Vitamin C and GSH in the patients of myocardial infarction.

## **MATERIALS AND METHODS**

### **Study design**

Present study includes a sum of 26 male patients of IDH along with same proportion of healthy male individuals as Control subjects (same parameters) with no known history of any disease. All the subjects, after obtaining their informed consent were examining clinically and information pertaining to age, sex habits and health status was recorded in Proforma. Blood samples were collected from both controls and patients for a series laboratory investigation using standard protocol for examination of lipid profile. A total antioxidant capacity and antioxidant status by FRAP modified method.

### **Inclusion exclusion Criteria**

All patients with a known history of Myocardial infarction, above 45 of age were included. Patients with hyperlipidemia, cholestremia (WHO, 2008) were considered eligible candidates. Patients below 45 years of age, incomplete medical records and

history of hypertension with less than 10 years were excluded.

### **Estimation of lipid profile**

Lipid profile parameters were estimated by commercially available kits (Randox laboratories UK). LDL was calculated by Friedewalds formula.

### **Estimation of antioxidant level**

FRAP modified method was used for investigation Vitamin C, Vitamin C & GSH.

### **Statistical analysis**

The mean and standard deviation (SD) of serum lipid profile antioxidant levels of vitamin C, vitamin E and Glutathione (GSH) levels estimated in patients and control were compared and student t-test was employed using ANOVA software.

## **RESULTS AND DISCUSSION**

In the present study patients presenting IDH belonged to the age group of 31-66 years. 26 IDH male patients as shown in Table 1 .The mean  $\pm$ SD of age was  $47\pm 9.761$  (years) and mean  $\pm$ SD age of control males was  $49.46\pm 8.15$  (years). The BMI values range between 19 to 34.6 with mean BMI of  $23.8\pm 3.02$  in patients and  $22.88 \pm 6.07$  in controls (Table 1).

### **Lipid Profile**

The level of lipid profiles and total antioxidant status were estimated in the patients and controls are presented in Table 2. The mean  $\pm$ SD levels of the cholesterol in patients are  $225.19\pm 49.69$  mg/dl and that of controls are  $147.8\pm 9.8$  mg/dl. The levels in the patients are statistically significant at  $p<0.05$  compared to controls. The mean  $\pm$ SD levels of triglyceride of patients and controls are  $189.73\pm 73.21$  mg/dl and  $107.3\pm 9.4$  mg/dl respectively and statistically significant.

### **Antioxidant Status**

Antioxidant levels of vitamin C, vitamin E and GSH estimated in IDH patients and controls are presented in Table 2. The mean  $\pm$ SD of vitamin C levels in IDH patients and controls found to be  $333.79\pm 64.19$  ( $\mu\text{mol/l}$ ), and  $436.44\pm 44.65$ ( $\mu\text{mol/l}$ ), respectively and found significant at  $p<0.05$ .

The mean  $\pm$ SD vitamin C levels were estimated as  $368.14\pm 70.8$  ( $\mu\text{mol/l}$ ), and  $481.36\pm 49.24$  ( $\mu\text{mol/l}$ ), found in serum of patient and controls are  $1840.91\pm 354.04$  ( $\mu\text{mol/l}$ ), and  $2407.02\pm 246.25$  ( $\mu\text{mol/l}$ ), respectively and found significant.

Lipids in circulating lipoproteins such as Low Density Lipoprotein (LDL) can

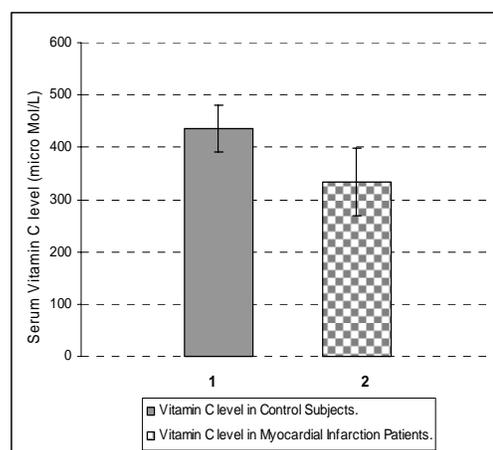
interact with reactive oxygen species resulting in lipid pre oxidation. They can react with oxygen to form highly reactive peroxy radicals, which produces hydro peroxide. Vitamin C can reduce the initiating reactive oxygen species so that initial or continued lipid per oxidation is initiated. The atherogenesis in humans based on oxidative modification of LDL as an initiating event in atherosclerosis. The major carrier of cholesterol and triglyceride in plasma is LDL. LDL can infiltrate the initial layer of arteries and under go oxidation. Oxidized LDL activates adhesion factor expression in endothelial cells (Castelli, 1988).

Antioxidant plays a vital role as preventive factor in the pathogenesis of canary heart disease and complication in diabetics (Maxwell, 1995). The measurement of the antioxidant levels, of vitamin C, vitamin E and GSH in IDH patients and healthy control a statistically significant difference was observed as shown in figure 1, 2, 3 respectively.

Vitamin E level had shown significantly reduced level in HCD patients. It has been observed that increase intake of ant oxidation primarily vitamin E is

associated with a reduced risk of IDH (Rimm *et al.*, 1993).

The measurement of the total antioxidant capacity in body fluids proved to be an important prognostic or diagnostic guide in patients with IDH, for implementation of antioxidant therapy. Our study also confirmed that there is an increased oxidative stress in IDH and emphasize the importance of assessing these markers for (Castelli, 1988) cholesterol and lipids in the risk of coronary artery disease.



**Figure.1 Shows Comparison of Vitamin C level in Control subjects And Myocardial Infarction Patients. On X-axis 1= Control Subjects, 2= Myocardial Infarction Patients.**

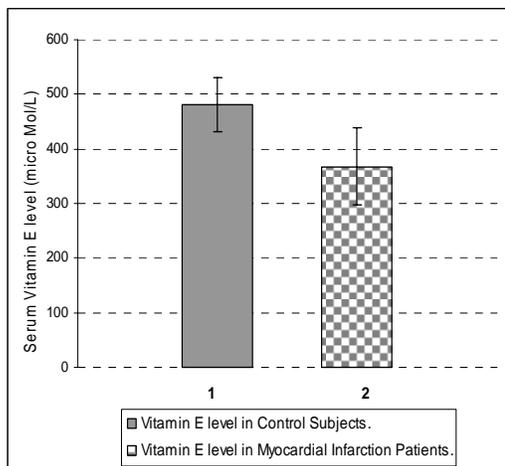


Figure.2 Shows Comparison of Vitamin E level in Control subjects And Myocardial Infarction Patients. On X-axis 1= Control Subjects, 2= Myocardial Infarction Patients

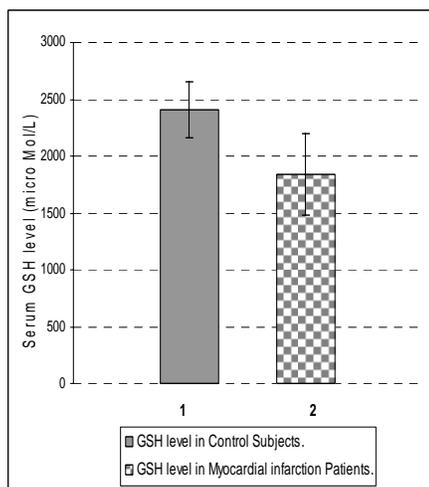


Figure.3Show comparison of GSH Level in control, Subjects and Myocardial Infarction Patients. On X-axis 1 = Control Subjects, 2 = Myocardial Infarction Patients.

Table 1: Parameter about Age, Sex and BMI of Patients and Controls:

	Case with CHD (n = 26)	Controls (n = 26)
Sex (Male)	26	26
Age (years)Mean +/- SD Male	47±9.76	9.46±8.15
BMI(Kg/m2)Mean+/- SD	23.8± 3.02	2.88±6.07

Table 2: Serum Lipid Profile and Antioxidant Levels of Patients and Controls:

Parameters	Controls (n=26) <sup>†</sup>	CHD Patients (n=26) <sup>*</sup>
Cholesterol (mg/dl) Mean±SD	147.8± 9.8.	225.1923±49.7
LDL(mg/dl) Mean±SD	93.0±7.9	132.42±31.12
HDL(mg/dl) Mean±SD	43.25±12.15	36.16±5.04
Triglycerides (mg/dl)Mean±SD	107.3±9.4	189.7±73.2
FRAP Vitamin. C (µmol/l) Mean±SD	436.45±44.65	333.79±64.2
FRAPVitamin.E (µmol/l)Mean±SD	481.35±49.2	368.14±70.8
FRAP GSH (µmol/l) Mean±SD	2407.03±246.25	1840.9±354.05

\*Significant at p<0.05

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# EFFECT OF ALUMINIUM METAL ON THE CHEMICAL STATUS OF GLUTATHIONE (GSH) IN AQUEOUS MEDIUM

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## ABSTRACT

The literature on the biological aspects of Aluminium, published since the earlier review clearly reflects the growing interest in trace elements or "micronutrients" and their distribution in animal and human tissues under environmental conditions. Since there have been a large number of studies in which Aluminium has been included among various trace elements whose distribution in numerous tissues has been followed in states of health and disease with no unusual exposure to Aluminium. Ellman's method was used to check the time and concentration dependent effect of Aluminium-Sulphate on GSH status in aqueous medium. Aluminium-Sulphate reduced the GSH level both with time and concentration. GSH reduction is due to oxidation of reduced GSH by Aluminium-Sulphate by changing it to GSSG. Present study is *in vitro* condition which may present the model for *in vivo* condition.

## INTRODUCTION

GSH is the important non-protein thiol in the cell and is of most interest in recent years (Khan and Khan, 2001., Meister, 1984,) due to their important part in many bio-chemical, physiological, pharmacological, actions and other roles like drugs-metabolism, providing protection to the cell from electrophonic attacks by chemicals and metabolites. The accumulation of metals in many disorders has provided to focus on GSH and other thiol therapies.

Increase level of iron and copper leads to per-oxidation of lipid and damage at cellular level by free-radicals (Sokol, 1996). Patients of thalassemia, there is accumulation of iron which causes reduction in GSH-Reductase function, in the same way copper accumulation (Summer, Eisenurg, 1985) also leads to decrease in GSH concentration in the hepatic biopsies of five subjects out of six examined. With increase of age the GSH level decreases and affect on health as there is positive co-relation between

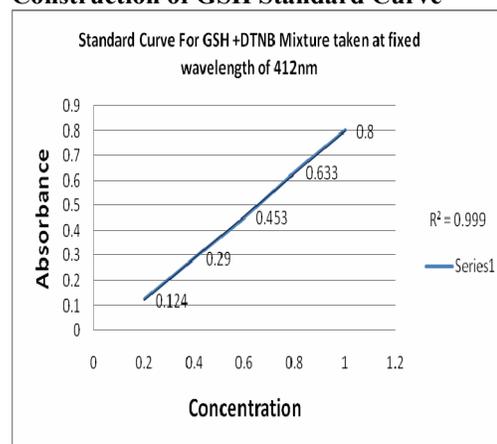
age and GSH depletion (Lang *et al.*, 1992). Young subjects were having seventeen percent more GSH as compared to elder subjects. GSH level show how much a person is healthy. GSH also exists inside each cell of the body and show hinderness in invasion of foreign materials and its depletion cause apoptosis (Duke *et al.*, 1998, Noble *et al.*, 1994). Aluminium has electron capturing capacity and the GSH has electron donating capacity so Aluminium is having likeness for Glutathione for water portion of the blood because of SH group of GSH (Qiug, 1998). In response of metal exposure more GSH is produced in the body but continuous exposure to metal leads to decrease high quantity of GSH (Quig, 1998; Haltburg *et al.*, 2001; Stokes and bagachi, 1993). Such substance may harm body defensive system. This study gives information about the Aluminium effect on GSH in aqueous phase or medium.

### Materials and Methods

NaOH (Fluks,), L-Glutathione (Fluka), DTNB; (Sigma), Aluminium Sulphate (Merck), Hydrochloric acid 35% (Kolchight), D/W (Double-distilled), Sartorius-balance(Japan), Disposable-

gloves, Micro-pippetes of 200, 500, 100- $\mu$ l (Finland), Oven (Germany), Magnetic-stirrer (Japan), pH-meter (Germany), Potassium-Dihydrogen-Phosphate (Merck) UV-spectrophotometer (Shimazdu). The entire chemicals were of the research grade.

### Methods (Ellman's Method, 1959) Construction of GSH Standard Curve



**Figure. 1- Standard Curve for Glutathione + DTNB Mixture taken at 412nm**

Mixture of 200  $\mu$ l from each of 0.2, 0.4, 0.6, 0.8 1milli molar solutions GSH, 0.5mM of DTNB Stock-solution and 2.3ml ph Phosphate Buffers (7.6-pH) was prepared and shaken thoroughly. Then incubated for 30<sup>0</sup>C for 5 minutes. The blank solution was without GSH. The absorbances were note at 412nm. Standard-curve was constructed between the concentrations and absorbances. The  $r^2$  value of the regression line was obtained that is 0.999 given in the fig.1.

### Concentration-Dependent effect of Aluminium Sulphate on GSH Level in Aqueous-Medium

In each of five test tubes 800  $\mu$ l of 1 milli-molar solution of GSH was taken and then to each test tube 1ml from 0.2, .04, .06, .08, 1mM solutions of Aluminium Sulphate were also added. This mixture was shaken thoroughly and the mixed 2ml of phosphate buffer of 7.6pH. From this mixture (GSH+ Aluminium Sulphate) 0.2ml was taken and mixed with it .5ml of DTNB solution. The control GSH consists of 0.2ml of 1mM GSH stock solution, 2.3ml of buffer, and 0.5ml of DTNB solutions. Both control and test solutions were prepared in accordance to the Ellman's method. The absorbances of

both control GSH solution and test GSH solution having Aluminium sulphate, buffer and DTNB solutions mixture at 412nm. The difference of absorbances of control and test solutions of GSH gives the absorbances of GSH after reaction with Aluminium sulphate. The decrease was shown by the concentration dependent effect is shown in the table 1.

### Time-Dependent Effect of Aluminium Sulphate on GSH level in Aqueous Medium

800  $\mu$ l solution of GSH stock solution was added in each of the 5 test tubes and to it 1ml from 0.2, 0.4, 0.6, .08, 1mM solution of Aluminium sulphate was added. 2ml of buffer was also mixed with above prepared mixture. This solution was having 0.4mM of GSH.

Table.1 Effect of different concentration of Aluminium Sulphate on the Chemical Status of Glutathione (GSH)								
Absorbance of 5,5-Dithiobis, 2-Nitrobenzoic acid (DTNB) blank Solution was 0.060 at 412nm								
Final Concentration of GSH in Final Mixture is 26.66 $\mu$ M								
S. No	Conc. Used of Al <sub>2</sub> (SO <sub>4</sub> ) <sub>3</sub>	Final Conc. of Al <sub>2</sub> (SO <sub>4</sub> ) <sub>3</sub> in Mixture	1 <sup>st</sup> ABS	2 <sup>nd</sup> ABS	3 <sup>rd</sup> ABS	Average of 3 Readings	Real Absorbance*	Real Absorbance for GSH Blank
1	0.2mM	6.67 $\mu$ M	0.246	0.341	0.390	0.326	0.266	0.289
2	0.4mM	13.33 $\mu$ M	0.258	0.315	0.373	0.315	0.255	0.287
3	0.6mM	20.00 $\mu$ M	0.252	0.307	0.361	0.307	0.247	0.288
4	0.8mM	26.67 $\mu$ M	0.247	0.298	0.333	0.293	0.233	0.290
5	1mM	33.33 $\mu$ M	0.273	0.267	0.308	0.283	0.223	0.287

\*Real Absorbance = Absorbance of Mixture - Absorbance of DTNB blank Solution.

0.2ml from GSH plus Aluminium sulphate mixture was taken and 2.3ml of buffer and 0.5ml of DTBN was added mixed and each of these test tubes was having 0.0266mM of GSH. Controlled GSH-solution was having 0.8ml of GSH, 2.3ml of buffer and 20.5ml of DTNB stock solutions. Absorbance was taken at 412nm after the following time intervals that are at zero minute, 30, 60, 90, 120, 150minutes. The difference of absorbances of control (GSH), and test (GSH+Aluminium-Sulphate). There was noted decrease with time in level of

GSH. These result are given in fig.2,3 and table 2.

### Statistical Analysis

To the data student's t-test was applied for the calculation of significance and difference between the control-GSH and GSH + aluminium mixture as mean  $\pm$  SD. To describe the influence of one parameter on another, by determining the co-relation co-efficient by using the pearsons correlation-test. P value was  $<0.05$  as level of significance and the calculations are given in Table 5 and 6.

Table.2 Effect of Aluminium Sulphate on the Chemical Status of Glutathione (GSH) with time								
Absorbance of 5,5-Dithiobis, 2-Nitrobenzoic acid (DTNB) blank Solution was 0.060 at 412nm								
Final Concentration of GSH in Final Mixture is 26.66 $\mu$ M, and Aluminium Sulphate was 33.33 $\mu$ M in Final Mixture								
S.No	Time Interval	1 <sup>st</sup> ABS	2 <sup>nd</sup> ABS	3 <sup>rd</sup> ABS	Average of 3 Readings	Real Absorbance*	GSH Blank ABS	Real Absorbance for GSH Blank
1	0 min	0.368	0.337	0.345	0.350	0.290	0.371	0.311
2	30 min	0.344	0.355	0.340	0.46	0.286	0.376	0.316
3	60 min	0.319	0.364	0.328	0.337	0.277	0.373	0.313
4	90 min	3.348	0.342	0.330	0.340	0.280	0.371	0.311
5	120 min	0.287	0.376	0.318	0.327	0.267	0.374	0.314
6	150 min	0.388	0.314	0.308	0.320	0.260	0.370	0.310

\*Real Absorbance = Absorbance of Mixture- Absorbance of DTNB blank Solution.

**RESULTS**

**Effect of Aluminium on the chemical status of GSH in aqueous solution**

Influence of Aluminium sulphate on the Glutathione concentration was studied first in with concentration effect and the time-dependent effect was checked. In concentration-dependent effect there was depletion in the level of GSH. This is given in the fig. no.2.

Similarly the time-dependent effect also determined and indicated the reduction in the GSH levels with the passage of time from 0-150 minutes in aqueous-phase as given in the fig.3.

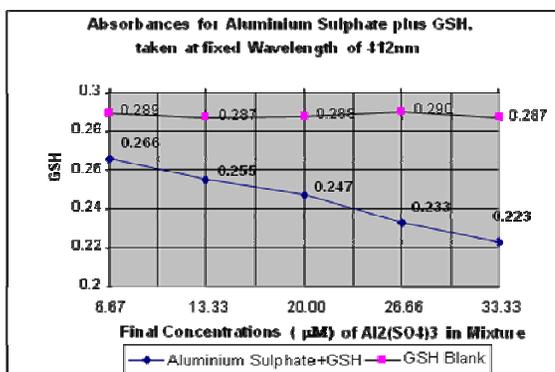


Figure. 2 Curves for Control Thiol Levels & Al<sub>2</sub>(SO<sub>4</sub>)<sub>3</sub> affected Thiols Level

**Table.3** Calculation for Concentration of GSH after reaction with Aluminium Sulphate by Ellman's Method

S.No	Real Absorbance	Concentration of GSH (µM) Remained
1	0.266	23.697
2	0.255	22.795
3	0.247	22.139
4	0.233	20.992
5	0.223	20.172

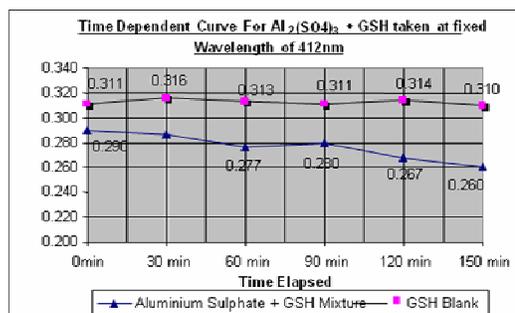


Figure. 3 Time Dependent Curves for Control Thiol Levels and Al<sub>2</sub>(SO<sub>4</sub>)<sub>3</sub> Affected Thiol Level

**Table.4** Calculation for Concentration of GSH After Reaction with Aluminium Sulphate with time by Ellman's Method

S.No	Real Absorbance*	Concentration of GSH (µM) Remained
1	0.290	25.664
2	0.286	25.336
3	0.277	24.598
4	0.280	24.844
5	0.267	23.779
6	0.260	23.205

Table. 5 Paired comparison t-test for concentration dependent effect of Al<sub>2</sub>(SO<sub>4</sub>)<sub>3</sub>

	Aluminium affected mixture	GSH control (Blank)
Mean	0.244	0.288
Variance	0.0003	0.000017
Observations	5	5
Pearson Correlation	0.103	
Hypothesized Mean Difference	0	
Df	4	
t-test	-5.965	
One tail	0.00234	
T critical one tail	2.131	
Two-tail	0.05	
T critical two-tail	2.776	

**Table. 6 Paired comparison t-test for time dependent effect of  $Al_2(SO_4)_3$**

	Aluminium affected mixture with time	GSH control (Blank)
Mean	0.2766	0.312
Variance	0.00012	5.1E-06
Observations	6	6
Pearson Correlation	0.272	
Hypothesized Mean Difference	0	
Df	5	
t-test	-7.993	
One tail	0.0024	
T critical one tail	2.0150	
Two-tail	0.0005	
T critical two-tail	2.570	

## DISCUSSION

The importance of GSH is due to its many use and activities like detoxification by taking part redox-system. Also cause the activation of enzymes having sh-group and conjugations. Aluminium-metal itself is beneficial for the human body but its salt, Aluminium-sulphate may harm. It is important to know about the effect of Aluminium-sulphate influences on GSH level in Aqueous medium. This is the reason that Aluminium-sulphate decreased the GSH level both concentration dependent effect and time dependent effect. The

following sequence of reaction suggested happening in this experiment.

Equation No. 1. 3-GSH+Aluminium (AL)  $\rightarrow$  AL (SG)<sub>3</sub>

The cause for the depletion of GSH concentration due to the increasing concentration of Aluminium-Sulphate and time-dependent effect is that there may be the formation of inter-mediate between the Glutathione and aluminum. In this study, both GSH and Aluminium have bio-logical activities, so the intermediate may not be determined in this research. This *in-vitro* study may Show model for *in-vivo* reaction.

## CONCLUSION

GSH is a tri-peptide thiol with simplistic capability of providing electrons due to the presence of sulphhydryl (- SH) group. Being an antioxidant and enzyme co-factor it provides protection to the mitochondria against the metabolites produces in the body. It plays an important role in complex-thiol-exchange system due to the electron providing ability and higher molecular level of GSH. It was observed that there was decrease in Glutathione amount both with time and concentration with Aluminium sulphate. The time

dependent effect was observed with the time course from 0-180minutes.

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**CHANGES IN BLOOD GLUCOSE LEVEL, GLYCOCYLATED HEMOGLOBIN  
LEVEL AND LIPID PROFILE AS A RESULT OF MONO-HYPOGLYCEMIC  
THERAPY (METFORMIN) IN TYPE II DIABETES MELLITUS**

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**ABSTRACT**

The purpose of the present study is to work out the effect of Metformin as a monotherapy to achieve desired glycemic effect in our society by assessing the levels of fasting blood glucose, lipid profile and HbA1c in Type 2 diabetes mellitus patients. The subjects included in this study were 48 male diabetic patients and 24 male control subjects aged between 26-65 years. Blood samples were taken from the patients and control subjects on two occasions before and after an interval of four months. The Hyperglycemic patients were given Metformin for at least four months after first collection of blood samples. Although no direct relation of better HbA1c level with comparatively better lipid profile has not been possible to established in our selected patients, who were well controlled diabetics, but it can be well apprehended that a better picture of cholesterolemia is seen in diabetic patients with comparatively lower HbA1c level. As a hypoglycemic therapeutic agent, Metformin has a good and reasonable effect on blood glucose level.

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**INTRODUCTION**

The need for strict glycemic control in order to avoid or postpone the development of late complications in patients with type 2 diabetes mellitus (DM2) has been well established (Stratton *et al.*, 2000). It has been shown that the onset of complications may be related to glycosylated hemoglobin (HbA1c) levels higher than 7%, a situation that is even more likely

if glycemic control is poor, with HbA1c levels above 8% (Krolewski *et al.*, 1995). Although the initial management of DM2 involves lifestyle changes and oral hypoglycemic drugs, a significant number of patients will need insulin in order to reach satisfactory glycemic control (Turner *et al.*, 1999). Furthermore, DM2 does not mean glycemic alterations alone since this disease is associated with

cardiovascular risk factors such as dyslipidemia, systemic arterial hypertension, and obesity (Reaven, 1988). This association is clinically relevant since over 50% of deaths among DM2 patients are due to cardiovascular disease (Gu *et al.*, 1998). Treatment of DM2 must include pharmacological agents able to improve not only glycemic levels, but also blood pressure (BP), lipid levels, and body weight, since in approximately 90% of type 2 diabetics hyperglycemia is associated with other cardiovascular factors that constitute the metabolic syndrome. Several studies (Van *et al.*, 2004; Lorenzo *et al.*, 2003) have demonstrated that, in order to prevent the development and progression of chronic complications of diabetes, a comprehensive approach to all elements of the metabolic syndrome is required. The main feature of the metabolic syndrome, which can be clinically assessed by measurement of the waist circumference (WC) whenever more sophisticated laboratory methods are not available (Poirier *et al.*, 2005), is insulin resistance. After Metformin proved to be effective in reducing insulin resistance (Despres, 2003),

several studies were undertaken to assess its effects on total cholesterol (TC), triglycerides (TG), and HDL-cholesterol (HDL-C) levels, and also on BP and body mass index (BMI). However, there is no consensus about its beneficial effects on these parameters (Wulffele *et al.*, 2004). Metformin is a biguanide used as an antihyperglycaemic agent in patients with diabetes. It improves peripheral and liver sensitivity to insulin. It reduces basal liver glucose production and increases insulin-stimulated uptake and utilization of glucose by peripheral tissues (AHFS, 1999). Metformin may produce a modest favorable effect on serum lipids and some weight stabilization or loss. Metformin lowers both fasting, and postprandial blood glucose levels (Bailey, 1996). Adverse effects, especially non-serious gastrointestinal effects, require discontinuation of the drug in less than 5% of patients. No cases of lactic acidosis were found in a recent systematic review (Salpeter, 2003). Since the use of Metformin for type 2 diabetes mellitus may have some positive effects on cardiovascular morbidity, its use has aroused a high

interest. Two meta-analyses on Metformin compared with sulphonylureas and placebo have been published (Campbell, 1995; Johansen, 1999). However, primary outcomes were not collected (Shaughnessy, 2003).

#### **MATERIAL AND METHOD**

Metformin is marketed by Aventis pharma under trade name Neodipar. It was obtained from local market. Kits (Radox Laboratories) was purchased from Ireland. All other chemicals used were of analytical reagent grade with no further purification.

**Drugs Included:** Metformin is a insulin sensitizer belongs to Biguanides group of oral hypoglycemic drugs. It is marketed by Aventis pharma under trade name Neodipar. It was obtained from local market

**Participants:** Participants include 48 male diabetic patients (type 2 diabetes mellitus) and 24 male control subjects aging between 26-65 years, appearing as an outdoor patient at different hospitals/ health care clinics of Dera Ismail Khan. They were selected after preliminary medical examinations for participation in the study program. All the participants were remained on usual

Pakistani diet which could be regarded as high fiber diet. Those having a history of hypersensitivity to Biguanides or having hepatic or renal impairments were excluded from the study. Patients on any concomitant medication which may interact with hypoglycemic action of the study drug were also excluded.

**Study Protocol:** All the participants after their consent were screened for inclusion in the study program. Blood samples were collected from the patients on two occasions spaced by four months interval to assess the changes in the fasting blood glucose level, glycosylated hemoglobin and lipid profile as a result of changed hypoglycemic therapy. Thus patients were given Metformin for at least four months and the blood samples were collected before and after the therapy. The subjects of this group were having ages between 26 and 65.

**Analytical Procedure:** Blood samples were analyzed for the estimation of fasting blood glucose level, glycosylated hemoglobin, cholesterol, triglycerides, HDL-c, and LDL-c using spectrophotometer methods at the laboratory of National Diagnostic

Center and Rauf medical center Dera Ismail Khan. Kits (Randox Laboratories Ltd, Crumlin Co, Artim, Ireland) for the estimation of all analytes except HbA1c were obtained from the local market or main suppliers outside Dera Ismail Khan. HbA1c was determined by DCA 2000 HbA1c analyzer.

**RESULTS**

The detailed average blood glucose level and lipid profile of 24 control subjects and 48 diabetic Patients on single drug therapy are given in Tables (1-6) and the details are also shown in Figure 1-3. Tables (1-6) shows the effect of Metformin alone, in maintain blood glucose level, HbA1c and lipid profile within normal limits in diabetic patients of the age group 26-65. The Metformin alone kept the glucose level within normal fasting range and the values were significantly higher in diabetics as compared with the control Subjects of corresponding age groups

(94.4 ± 1.7 mg/dl) (Table 6). The Average blood glucose levels as a result of Metformin therapy was 117.775 ± 4.2mg/dl (table 6). Almost similar trend was noted for the mean values of HbA1c being significantly lower (5.75 ± 0.1mg/dl) (table 6) in the control group of all age groups. The mean values of HbA1c with Metformin were (8.2± 0.25 %) (table 6) in all age groups. As all the patients were controlled diabetics regarding the value of serum glucose and HbA1c level, their lipid profile was not drastically altered as compared with the controlled subjects (cholesterol 164.55 ± 9.8, triglycerides 151.082.3 ± 9.4, HDL-c 37.1 ± 0.9 and LDL-c 100.025 ± 7.9) (table 6). Mean values of serum cholesterol, and triglycerides were 167425 ± 4.4 and 136.725 ± 2.8 respectively (table 6), in all age groups when the diabetic patients were on Metformin.

Table 1 Blood glucose, HbA1c, Cholesterol, Triglycerides, HDLc, LDLc, in the control subjects and the diabetic Patients with in the age range of 26-35 years. Each value is the mean ± sd. of six observations

SNo	Subjects	Blood Glucose Level Fasting {mg/dl}	HbA1c {%}	Cholesterol {mg/dl}	Triglycerides {mg/dl}	HDL -C {mg/dl}	LDL-C {mg/dl}
1	Control subjects	86.2± 1.7	5.3±0.1	148.5±9.8	109.3±9.4	35.2±0.9	95.0± 7.9
2	Diabetic patients on Metformin	114.5±2.3	7.7±0.1	155.2±4.9	137.7±29.0	36.2±1.0	91.7±9.2
	T-Test	6.421	8.314	0.536	0.832	-0.230	-0.123

*P* < 0.05 as compared with the control subjects

Table 2 Level of blood glucose, HbA1c, Cholesterol, Triglycerides, HDLc, LDLc, in the control subjects and the diabetic patients with in the age range of 36-45 years. Each value is the mean ± sd. of six observations.

S.No	Subjects	Blood Glucose Level Fasting {mg/dl}	HbA1c {%}	Cholesterol {mg/dl}	Triglycerides {mg/dl}	HDL -C {mg/dl}	LDL -C {mg/dl}
1	Control subjects	96.2±2.1	5.3±0.1	173.6±8.	167.33±32.6	38.7±0.6	99.2±10.0
2	Diabetic patients on Metformin	112.7±5.7	8.1±0.2	165±4.7	109.2±5.9	35.7±1.3	107.8±6.5
T-Test		1.936	6.467	-0.375	-1.689	-0.936	0.535

*P < 0.05 as compared with the control subjects*

Table 3 Level of blood glucose, HbA1c, Cholesterol, Triglycerides, HDLc, LDLc, in the control subjects and the diabetic patients with in the age range of 46-55 years. Each value is the mean ± sd. of six observations.

S.No	Subjects	Blood Glucose Level Fasting {mg/dl}	HbA1c {%}	Cholesterol {mg/dl}	Triglycerides {mg/dl}	HDL -C {mg/dl}	LDL -C {mg/dl}
1	Control subjects	99.3±1.2	6.3±0.2	164.3±10.4	154.8±26.2	38.9±0.9	98.9±7.4
2	Diabetic patients on Metformin	122.7±7.6	8.5±0.3	172.0±8.3	142.2±21.9	37.5±0.8	106.2±5.7
T-Test		3.056	4.846	0.716	-0.198	0.623	0.689

*P < 0.05 as compared with the control subjects*

Table 4 Blood glucose, HbA1c, Cholesterol, Triglycerides, HDLc, LDLc, in the control subjects and the diabetic patients with in the age range of 56-65 years. Each value is the mean ± sd. of six observations.

S.No	Subjects	Blood glucose Level fasting {mg/dl}	HbA1c {%}	Cholesterol {mg/dl}	Triglycerides {mg/dl}	HDL -C {mg/dl}	LDL -C {mg/dl}
1	Control subjects	96.0±1.5	6.1±0.1	171.8±17.4	172.9±23.9	35.6±1.0	107.0±16.7
2	Diabetic patients on Metformin	121.2±7.7	8.5 ±0.3	177.2±11.2	157.8±57.3	36.3±1.6	109.3±7.2
T-Test		2.739	5.842	0.178	-0.200	0.902	0.123

*P < 0.05 as compared with the control subjects*

Table 5 The effect of age on the efficacy of mono therapy with Metformin alone in relation to the changes in the level of blood glucose, HbA1c and lipid profile in diabetic patients. Each value is the mean ± sd. of six observations

Age yrs	Therapy	Blood Glucose Level Fasting (mg/dl)	HbA1c (%)	Cholesterol (mg/dl)	Triglycerides (mg/dl)	HDLc (mg/d)	LDLc (mg/dl)
26-35	Metformin	114.5 ±2.3	7.7 ±0.1	155.2±4.9	137.7 ±29.0	36.2 ±0.9	91.7 ±9.2
36-45	Metformin	112.7±5.7	8.1 ±0.2	165.3±4.7	109.2±5.9	35.7±1.3	107.8±6.5
46-55	Metformin	122.7 ±7.6	8.5 ±0.2	172.0 ±8.3	142.2±21.9	37.5 ±0.8	106±5.7
56-65	Metformin	121.2 ±7.7	8.5 ±0.3	177.2±11.2	157.8±57.3	36.3±1.6	109.3±7

*P < 0.05 as compared with the Metformin*

Table 6 Average Level of blood glucose, HbA1c, Cholesterol, Triglycerides, HDLc, LDLc, in the control subjects and the diabetic patients treated with Metformin with in the age range of 26-65 years.

S.No	subjects	Blood Glucose Level Fasting {mg/dl}	HbA1c {%}	Cholesterol {mg/dl}	Triglycerides {mg/dl}	HDL -C {mg/dl}	LDL -C {mg/dl}
1	Controls subjects	94.4± 1.7	5.75±0.1	164.5±9.8	151.08±9.4	37.1±0.9	100± 7.9
2	Diabetic patients on Metformin	117.7±2.3	8.2±0.1	167.4±4.9	136.7±29.0	36.4±1.0	103.7±9

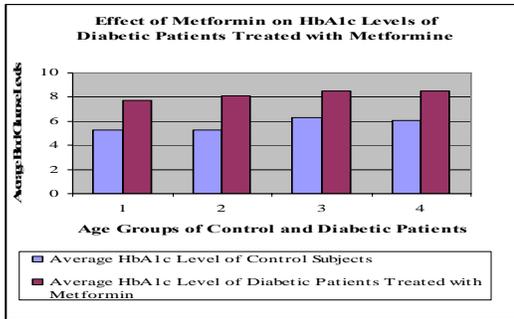


Fig. 1 Effect of Metformin on HbA1c Level in Diabetic Patients Age (26-65) (X-axis 1shows age group 26-35, 2: 36-45, 3: 46-55, 4: 56-65.

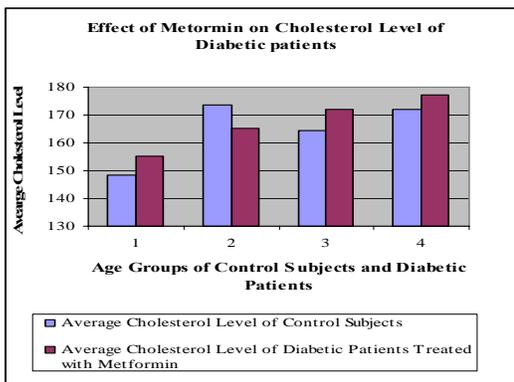


Fig. 2 Effect of Metformin on HbA1c Level in Diabetic Patients Age (26-65) (X-axis 1shows age group 26-35, 2: 36-45, 3: 46-55, 4: 56-65.

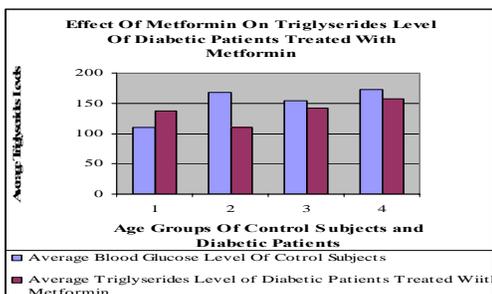


Fig. 3 Effect of Metformin on HbA1c Level in Diabetic Patients Age (26-65) (X-axis 1shows age group 26-35, 2: 36-45, 3: 46-55, 4: 56-65.

**DISCUSSION**

There are many drugs either alone or in combination is being used to maintain normal glycemic levels in patients with type 2 diabetes mellitus. It is a chronic

illness and requires continuous medical care, patient’s self management and education to prevent acute complications and to reduce long term complications (Renders *et al.*, 2001). Long term complications include retinopathy, nephropathy, neuropathy, stroke, ischemic heart disease and diabetic foot (Irene *et al.*, 2000). Individual variation to drug response, pharmacokinetics and drug compliance often lead to changes in therapeutic management (Garber *et al.*, 2002). Monitoring of glycemic status is considered as corner stone of care in diabetes (Guerci *et al.*, 2003). Estimation of glycosylated hemoglobin (HbA1c) could be regarded as a better indicator of glycemic status (Nathan *et al.*, 1984). In order to reduce the risk of cardiovascular diseases, often blood lipid profile is monitored along with blood glucose besides creatinine or urea to assess renal function (Irene *et al.*, 2000). In the present study we have tried to assess the efficacy of Metformin alone. The main objective of present study was to work out the mono therapeutic agent for optimal glycemic control in our population. Since diabetes mellitus is associated with metabolic derangements of variable degrees, there is always

possibility of changes in lipid profile that may lead to increased levels of risk factor e.g. LDL-C (Lamarche *et al.*, 1997), we have also studied the lipid profile patients with view to explore the relation of blood glucose level with lipid profile i.e., if the HbA1c is slightly higher in our diabetic patients than in our control subjects, what would be the pattern of lipid profile (Irene *et al.*, 2000). Almost all of our patients were controlled diabetics (Table 1-6) as seen from there fasting blood glucose level and HbA1c. Their lipid profile was also comparable to the control subjects of corresponding age group. In age group of 26-65 years, Metformin had not brought down the HbA1c level to that seen in control subjects (5.75%). In all the diabetic patients HbA1c was more than 7.3 % (7.5-8.7 %) (table 6) and was significantly higher like fasting blood glucose level as compared to the control subjects. In all age groups, the lipid profile was not very much different from that of the control subjects, although most of the parameters in lipid profile showed slightly higher values in age group 26-35 (Table 1) and slightly lower values in age group 36-45 (Table 2) as compare with the control subjects. Such

type of irregular pattern in the lipid profile was also seen in other two age groups i.e. 46-55 (Table 3) and 56-65 (Table 4) but, the values in all the age groups were not different statistically because of high individual variation ( $p>0.05$ ) however, in the age group 36-45 (Table 3) and 56-65 (Table 4) the values of fasting blood glucose and HbA1c were higher in diabetic patient on either hypoglycemic regimen, but here again the difference was not statistically significant. Due to limited number of participants (control subjects and the diabetic patients) and short duration of study no far reaching conclusions can be drawn, however, our data is supported well by a previous study in which little effect of hypoglycemic therapy is seen on lipid profile of the diabetic patients (Collins *et al.*, 2003 ). In a study conducted by Collins *et al* the effect of Simvastatin on lipid profile in diabetic patients on hypoglycemic agents was compared with placebo just to asses the effect of hypoglycemic therapy on lipid profile and it was found that patients responded well to Simvastatin for its hypolipidemic effects but, almost no response was seen in patients on hypoglycemic therapy

while taking placebo indicating little effect of hypoglycemic therapy on lipid profile. Our patients were mostly controlled diabetics, and being educated, they were well cautious about their dietary intake. This is reflected by their blood lipid profile and HbA1c which was not far disturbed from the normal values. Hypercholesterolemia is often seen in uncontrolled diabetes mellitus arising as result of disturbed intermediary metabolism due to insulin insufficiency (Lawes *et al.*, 2004). Data in Table 5 reveals age related rise in HbA1c in patients who were on Metformin alone, however, there was negligible decrease in HbA1c when these patients were given Metformin for better hypoglycemic response, which was indeed observed in all the age groups. Metformin is an insulin sensitizer. Metformin works by decreasing hepatic gluconeogenesis and increasing muscle glucose uptake/metabolism, so increasing insulin sensitivity (Lawes *et al.*, 2004). Age wise rise in cholesterol and triglycerides almost paralleled the rise of HbA1c when the patients were on Metformin with the exception of age group 36-45 (Table 2) when the triglycerides level

did not show age related rise. Almost similar fall in HDL-c and rise in LDL-c was observed when the patients were on Metformin with exception of age group 56-65 (Table 4) where HDL-c did not show any fall and LDL-c did not show a sufficient rise. During this study, the diabetic patients were not allowed to take any hypolipidemic drug as we wanted to relate the glyceamic status of the patients with lipid profile which is often disturbed in uncontrolled diabetes mellitus.

#### **CONCLUSION**

In our selected patients although no direct relation of better HbA1c level with comparatively better lipid profile has not been possible to established, who were well controlled diabetics, yet it can be well realized that better picture of cholesterolemia is seen in diabetic patients with comparatively lower HbA1c level, furthermore the mono hypoglycemic agent (Metformin) studied showed good therapeutic effect. Although the changes were not statistically significant because of very limited number of participants (48) in the age groups (26-65 years).

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# EFFECTS OF INTEGRATED CURRICULUM ON ACADEMIC ACHIEVEMENT OF THE STUDENTS

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## ABSTRACT

There is a body of brain research that supports the notion that learning is best accomplished when information is presented in meaningful connected patterns. This includes interdisciplinary studies that link multiple curricular areas. Concept of integrated curriculum is based on this notion. In the present research the integration of English content course with Pakistan studies produced a statistically significant success rate for students in experimental group. Research, done over four weeks, concluded that the integrated curriculum improves student achievement. It is just like a fact that in traditional school system students demonstrates below required level skills in English and Pakistan studies. These students lack communication skills and also need guidance in developing critical thinking skills. To encourage learning of skills and development of critical and ethical thinking, an experimental approach to curriculum is recommended that should focus on linking different areas with each other.

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## INTRODUCTION

The subject of curriculum integration has been under discussion off and on for the last half-century, with a resurgence occurring over the past decade. The "explosion" of knowledge, the increase of state mandates related to myriad issues, fragmented teaching schedules, concerns about curriculum relevancy, and a lack of connections and relationships among disciplines have all been cited as reasons for a move towards an integrated curriculum. Almost every teacher has experienced the feeling that "there just isn't enough time to get it all in" or "the school day just isn't long

enough for all that I'm supposed to do; it seems that every year there are more things added to the curriculum." This feeling of frustration is one of the motivations behind development of an integrated curriculum. Teachers see this as part of the solution to the requirements that pull teachers in different ways. The integrated curriculum is a great gift to experienced teachers. It's like getting a new pair of lenses that make teaching a lot more exciting and help us look forward into the next century. It is helping students take control of their own learning. These forces in contemporary schools are

reinforced by (Benjamin, 1989), when he cites the trends towards global interdependence and the interconnectedness of complex systems, the increase in pace and complexity of the twenty-first century, the expanding body of knowledge, and the need for workers to have the ability to draw from many fields and solve problems that involve interrelated factors. In this connection the present article is an academic attempt to consider ways and means as to develop innovative curricula that are responsive to today's demands on students, faculty, and resources, and are attentive to the needs of students at various level of education.

According to educationists there are many different ideas about what constitutes curriculum integration. For example, (Fogarty, 1991) writes that curriculum integration is "based on a holistic view of learning and recognizes the necessity for learners to see the big picture rather than to require learning to be divided into small pieces. Integrative curriculum ignores traditional subject lines while exploring questions that are most relevant to students. In a Foundation Coalition workshop "Curriculum Integration: Why and

How," the following definitions are offered.

**Strong Version:** In its stronger version, curriculum integration is a pedagogical approach to help students build a small set of powerful, broadly applicable concepts/abilities/skills instead of a large set of weak, narrowly applicable concepts/abilities/skills

**Weak Version:** In its weaker version, curriculum integration is a pedagogical approach to help students build connections across disciplines

A basic definition is offered by (Humphrey, 1981) when he states, "An integrated study is one in which children broadly explore knowledge in various subjects related to certain aspects of their environment". He sees links among the humanities, communication arts, natural sciences, mathematics, social studies, music, and art. Skills and knowledge are developed and applied in more than one area of study. In keeping with this thematic definition (Shoemaker, 1989) defines an integrated curriculum as, education that is organized in such a way that it cuts across subject-matter lines, bringing together various aspects of the curriculum into meaningful association to focus upon broad areas of study. It

views learning and teaching in a holistic way and reflects the real world, which is interactive. Within this framework there are varied levels of integration, as illustrated by (Palmer, 1991), who describes the following practices:

**Crosscurriculum sub objectives within a given curriculum guide**

Developing model lessons that include cross-curricular activities and assessments. Developing enrichment or enhancement activities with a cross-curricular focus including suggestions for cross-curricular "contacts" following each objective. Developing assessment activities that are cross-curricular in nature. Including sample planning wheels in all curriculum guides. Further description is provided by (Glatthorn, 1994).

(Dressel, 1958) definition goes beyond the linking of subject areas to the creation of new models for understanding the world: In the integrative curriculum, the planned learning experiences not only provide the learners with a unified view of commonly held knowledge by learning the models, systems, and structures of the culture) but also motivate and develop learners' power to perceive new

relationships and thus to create new models, systems, and structures.

These definitions support the view that integrated curriculum is an educational approach that prepares children for lifelong learning. There is a strong belief among those who support curriculum integration that schools must look at education as a process for developing abilities required by life in the twenty-first century, rather than discrete, departmentalized subject matter. In general, all of the definitions of integrated curriculum or interdisciplinary curriculum include:

- 1 A combination of subjects
- 2 An emphasis on projects
- 3 Sources that go beyond textbooks
- 4 Relationships among concepts
- 5 Thematic units as organizing principles
- 6 Flexible schedules
- 7 Flexible student groupings.

Briefly what is learned and applied in one area of the curriculum is related and used to reinforce, provide repetition, and expand the knowledge and skills learned in other curriculum areas. This process allows the student to quickly perceive the relationships between learning in all

curriculum areas and its application throughout each of the school subjects.

### **OBJECTIVES**

Following were the objectives of the study.

1. To discuss concept of integrated curriculum.
2. To investigate the achievement of the students in the subjects of English and Pakistan studies
3. To calculate effects of teaching through integrated curriculum on academic achievement of the students.

### **SIGNIFICANCE**

The study is of great significance because integrated Curriculum is relevant to the needs and psychology of the learner and engages the learner by, Combining general and specific content. Focusing on learner values, culture, discovery, thinking processes, and workplace experiences. Creating learning situations that transfer learning and knowledge. Reflecting the complexities of knowledge and its application in diverse contexts, problems, and situations. By reinforcing general and vocational education concepts and skills, and by connecting learning to real life/work applications,

curriculum integration increases the relevancy of learning experiences. Educators designing curriculum must ask the basic question of the teaching-learning paradigm: what does the student need to know and be able to do? Integrated School-to-Work curriculum influences what skills and information students learn, how well they learn, and how transferable these skills and knowledge are to real-world applications. In traditional classes students are often unmotivated to become serious learners. In many incidences, students do not seem to retain the knowledge and skills presented to them in the classroom. One finding concerning student retention shows that: In integrated teaching student retention is up to 90 % because what they say and do. Perhaps most importantly, using an integrated approach to the curriculum helps prepare students for lifelong learning. Another rationale for curriculum integration finds its basis in the commonsense wisdom of teachers, who are coping with an increased body of knowledge, large classes, and many mandates related to everything from drug awareness to AIDS to bus safety. When all of these

requirements are added to the traditional body of knowledge for which teachers feel responsible, integration is seen as one way to meet both the needs of the students and the requirements of the state. The integration of curricular areas and concepts allows teachers to assist students as they prepare for the next century.

Enduring argument for integration is that it represents a way to avoid the fragmented and irrelevant acquisition of isolated facts, transforming knowledge into personally useful tools for learning new information.

Finally, the movement toward a global economy and international connections, as well as the rapid changes in technology, are pushing education toward integration. The ability to make connections, to solve problems by looking at multiple perspectives, and to incorporate information from different fields, will be an essential ingredient for success in the future.

## **METHOD**

**Population:** All the students at secondary level of District D.I.Khan constituted the population of the study.

**Sample:** A sample of 40 students of 9th class from G.H.S. S No-3, D.I.Khan was

included in the study. Through random sampling method technique students were divided into two equal groups.

**Instrument:** Researchers made, Pre-test and Post-test were used as instruments of the study.

**Hypothesis:** There are no significant effects of teaching through integrated curriculum on the academic achievement of the students at secondary school level.

**Procedure:** Before assigning students to experimental and control group pre-tests in the subjects of Pakistan studies and English were administered to them. After termination of the test one group was labeled experimental and the other was named as control group. Two teachers, almost similar were randomly assigned to the experimental and control group.

The experimental group students were blocked into integrated English and Pakistan studies teaching. This integrated approach emphasized writing workshop, thematic literature, and cooperation between the English and Pakistan studies teachers. Individualized conferences with the English instructor helped students improve writing weaknesses. Group projects included small group discussion, collaborative

presentations on reading material, and a final creative work. Activities related to Pakistan studies, such as movies, visits, and sessions with special speakers, were incorporated into the curriculum. The historical theme was reinforced through the reading, speaking, and writing assignments. These students took the same tests as all other students in control group. Control group students were placed in classes using the traditional approach to English and Pakistan studies, with emphasis on isolated skills, drill work, and no cooperation between the teachers. After the one-month period, the two groups were compared on post-test. (See table- 3 and 4).

**PRESENTATION AND ANALYSIS OF DATA**

**Table-1 Pre-test results of experimental and control group in the subject of English**

Variable	N	Mean	t-value	Sig: level
Experimental	20	57.49	0.62	0.01
control	20	56.99		

Table shows that mean score of Pre-test results of experimental in the subject of English was 57.49 and control group obtained Mean score of 56.99 while t-value was 0.62, which is not significant at 0.01 level of significance. The null hypothesis that there is no significant difference in Mean scores of

experimental and control group on pre-test. was accepted.

**Table2 Pre-test results of experimental and control group in the subject of Pakistan studies.**

Variable	N	Mean	t-value	Sig: level
Experimental	20	59.63	0.51	0.01
Control	20	58.10		

It shows that means score of Pre-test results of experimental in the subject of Pakistan studies was 59.63 and control group obtained mean score of 58.10 while t-value is 0.51, which was not significant at 0.01 level of significance. The null hypothesis that there is no significant difference in Mean scores of experimental and control group on pre-test. was accepted.

**Table3 Post-test results of experimental and control group in the subject of English**

Variable	N	Mean	t-value	Sig: level
Experimental	20	69.37	2.91	0.01
Control	20	58.53		

Table shows that mean score of Pre-test results of experimental in the subject of English was 69.37 and control group obtained Mean score of 58.53 while t-value was 2.91 which is significant at 0.01 level of significance. The null hypothesis that there is no significant difference in Mean scores of experimental and control group on post-test was rejected.

**Table4 Post-test results of experimental and control group in the subject of Pakistan studies.**

Variable	N	Mean	t-value	Sig: level
Experimental	20	71.45	3.12	0.01
Control	20	59.22		

It shows that mean score of Pre-test results of experimental in the subject of Pakistan Studies was 71.45 and control group obtained Mean score of 59.22 while t-value is 3.12 Which was significant at 0.01 level of significance. The null hypothesis that there is no significant difference in Mean scores of experimental and control group on post-test was accepted.

## RESULTS

The results of the study indicate that students enrolled in experimental group obtained high score than control group on post-tests. Students who were exposed to integrated curriculum as compared to students in a traditional classroom performed well this significant increase in test scores reinforces the notion that teaching through integrated curriculum improve academic achievement.

## DISCUSSION

The research supports the positive effects of curriculum integration and is consistent with the study conducted by (Lipson, 1993), according to which the integrated curriculum helps students

apply skills. An integrated knowledge base leads to faster retrieval of information. Multiple perspectives lead to a more integrated knowledge base. Integrated curriculum encourages depth and breadth in learning. Integrated curriculum promotes positive attitudes in students. Integrated curriculum provides for more quality time for curriculum exploration. (Markus, 1991) reached to the conclusion that students learn more, do better when social studies and English were taught through integrated way.

It is inline with the findings of (Oster, 1993) according to which the teacher and student express an increasingly widespread enthusiasm for curriculum integration.

The findings of present research seem very logical when one considers the work of (Gehrke, 1991), who found that in integrated language arts classrooms the amount of time spent in art and literature is more than double the amount of time spent on these subjects in classrooms where integration is not a priority.

(Friend, 1984) found that integrated program students developed team spirit and improved their attitudes and work

habits. This was attributed, in part, to the fact that teachers met in teams and were able to quickly recognize and deal with a student's problem. (Vars, 1965) also reports that motivation for learning is increased when students work on "real" problems—a common element in integrated programs. When students are actively involved in planning their learning and in making choices, they are more motivated, reducing behavior problems. (Jacobs, 1989) also reports that an integrated curriculum is associated with better student self-direction, higher attendance, higher levels of homework completion, and better attitudes toward school. Students are engaged in their learning as they make connections across disciplines and with the world outside the classroom.

The movement towards integrated curriculum is a move away from memorization and recitation of isolated facts and figures to more meaningful concepts and the connections between concepts. The twenty-first century requirement for a flexible use of knowledge goes beyond a superficial understanding of multiple isolated events to insights developed by learning that is connected-or integrated. It is necessary

for each school to determine the best procedure to meet the needs of the particular student body. A secondary school may face different constraints than an elementary school. Rather than move from a traditional, subject-specific curriculum to an integrated curriculum in one sudden sweep, schools find more success when they make gradual changes, making sure that everyone involved feels a sense of ownership of and commitment to the changes.

### **RECOMMENDATIONS**

1. Educators, with input from public and private sector may revitalize the existing school-to-work curriculum or design a new curriculum that is applied and integrated in order to enhance student learning. Instruction and assessment support this curriculum.
2. Academic and vocational teachers plan and work together to link learning activities in classrooms with a full range of work-related experiences.
3. Educators work with parents and community members to develop meaningful learning experiences that will help prepare all students and teachers for new changes in curriculum.
4. Administrators support collaboration between academic and top

management for new assessment strategies, and the involvement of donor agencies

5. There should be planning team made up of teachers, school staff, and business representatives to develop a common philosophy that guides the school-to-work curriculum development and decide on strategies for implementation of an integrated academic and vocational education.

6. Program supporting the development of school-based curriculum and instruction relating to school-to-work reform must be arranged.

7. Researchers may use a checklist for excellence in school-to-work transition to assess current practices and set new goals for integrating academic and vocational education.

8. Steps may be taken which should promote effective curricular strategies, effective instructional strategies, effective cooperative efforts, and effective administrative practices and procedures for integrating academic and vocational education.

9. Create a school climate that leads to an understanding of the equality of general and science education as well as exploration of options for integrating

curricula.

10. Anticipate resistance from students, faculty, and administration, and develop plans to address this resistance. Facilitate their acceptance by helping them understand the myths and realities of integrated education.

11. Restructure schools to allow for the development of career academies or flexible scheduling that will allow students more time to work on career related activities.

12. Provide professional development on school-to-work issues so that teachers understand what work requires of schools.

13. Develop schedules, staff assignments, and access to resources conducive to teacher collaboration.

14. Provide planning time for teachers to observe and experience hands-on activities in each other's classrooms.

15. Provide opportunities for teachers to meet with experts in order to develop curricula that are practical and meaningful for students.

16. Encourage development of teacher externships so teachers can acquire first-hand experiences that will help them understand skills their

students will need for career opportunities and how they can incorporate those skills into the subjects they teach.

17. Work with the curriculum team to develop alternative assessments that evaluate student progress based on skills taught; identify goals that students are expected to achieve.

18. Teachers should design lessons and units that have real-world applications. Encourage students to work in teams to accomplish goals.

19. After the necessary organizational and administrative structures are in place, make an effort to learn more about the current workplace. Update knowledge of skill requirements through teacher externships, meetings with resource persons, and awareness of changing technology.

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# **REASONS FOR LOW SUGARCANE PRODUCTION IN PAKISTAN: (A case study of District Charsadda, KP)**

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## **ABSTRACT**

The present study conducted with the aim to examine the various reasons for the low sugarcane production. The study area for the said task was District Charsadda. For this purpose primary data has been collected through a comprehensive face-to-face interview from forty (40) different agriculturists and secondary data has obtained from the Economic Survey of Pakistan (2006-07). Sugarcane crop is an important cash crop of Pakistan and its registered share in GDP is 3.4 % and its production for the year 2005-06 is estimated as 44312 tons. Sugarcane has been sown in the area of 907000 hectares during 2005-06. The Punjab province accounts for 60-65% of the area under sugarcane, Sindh 25-30%, NWFP about 10%, and Balochistan less than 1 % respectively. It is also remains a cash crop for the agriculturists of Charsadda, Mardan, Peshawar and Swabi districts. It has been observed that factors influencing sugarcane production are natural factors like rainfall, frost, salinity and logging. Like wise agricultural and policy factors are small holding, outdated technology, low yielding varieties, illiteracy, and lack of irrigation facilities also effecting sugarcane production. Similarly economic factors are such as variation in prices, and lack of support price policy. In addition sugarcane diseases, high price of fertilizer input and lack of credit are other factors causing low productivity. Further, it has been found that the prices paid by sugar mill owners in the NWFP province are comparatively lower than those paid in other provinces, while the returns from gur production are better as compared to those obtained from the sugar-mills. All of the agriculturist suggests that the government should provide subsidized inputs and also encourage gur production to improve returns from sugarcane.

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## **INTRODUCTION**

Pakistan is an agrarian economy and agriculture is the mainstay of Pakistan economy. Agriculture accounts for nearly 22 % of gross domestic product and employs 44.8 % of its workforce. Most importantly, 65.9 % of country's population living in rural areas is directly or indirectly dependent on

agriculture for their livelihood. Major crops grown in a country characterize agriculture sector of any country. These crops contribute to domestic use as well as are sources of foreign exchange earnings. In this perspective the major crops of Pakistan are cotton, wheat, rice, and sugarcane. Since major crops, accounting for 35.2 % of agricultural

value added registered a decline of 3.6 % as production of the four major crops, namely cotton, wheat, rice and sugarcane has been comparatively less than last year for a variety of reasons including excessive rains at the time of sowing and incidence of frost damaging sugarcane (Economic Survey of Pakistan, 2006-07). Among these major crop sugarcane occupies a unique importance in Pakistan's agricultural economy because of its multipurpose usage. It is highly water-intensive cash crop mainly grown for sugar and sugary productivity or in simple words it serves as a major raw material for the production of white sugar and gur. It is also forms essential items for industries like chipboard, paper, pharmaceuticals, juices, bakery products, sweets and chocolates, soft drinks and beverages etc., sugarcane as a whole is grown mostly in tropical and subtropical regions of the world.

There is a need to accelerate the growth in agriculture sector in order to produce enough sugarcane for the countries rapidly increasing demand and to earn more foreign exchange by reducing import of the sugar. For this purpose effective extension services is necessary

to aware and educate the farmers about the advantages of the improved agriculture practices and as a package deal, to help them to increase their farm production to maximum. To increase the low cane yield, modern agriculture practices should be adopted. Therefore, there is a dire need to motivate agriculturists to keep them abreast with the latest agriculture techniques in addition they should have full faith and complete knowledge of adoption.

#### **LITERATURE REVIEW**

A few studies have been done such as Ahmad (1971) examined the contribution of water, fertilizer and other factors in the production of sugarcane on bullocks and tractors farms by using regression equation. The results indicate that fertilizer, water and other inputs contributed 12.3%, 37.3%, and 50.4 % towards the average yield respectively on bullock farms. These respective factors contributed 27.4%, 10.7%, and 61.7 % on tractors farms. Mustafa and Gill (1979) conducted a study on an econometric analysis of sugarcane production. Using aggregate time series data about the production of sugar cane, area under sugarcane, supply of irrigation water and price of sugarcane

over the period 1966-67 to 1978-79 were collected. Analysis was conducted by using regression equations and applied Ordinary Least Square (OLS) techniques. The study found that (i) sugarcane acreage lagged one year had significantly influenced the production during the said period. (ii) Sugarcane production was significantly influenced by the one year lagged price of sugarcane. (iii) Supply of irrigation water shown significant effect on the production of sugarcane. According to the study done by Baloch (2001), the agro-climatic conditions of Pakistan are quite favorable for sugarcane cultivation but factors like illiteracy and less awareness of the sugarcane growers about management practices, discouraging attitude of Sugar Mills' management and delayed payments to growers, lack of support price policy, high costs of inputs, outdated technology and low yielding varieties, natural calamities, lack of irrigation facilities, low cropping intensity, harvesting over-age cane and prolonged "kill-to-mill" intervals, high dependence on ratoon<sup>1</sup> crop, inadequate research and development in this field, and lack of agriculture department are the socio-

economic elements behind low sugar production in Pakistan. Thus sugarcane crop is an important cash crop of Pakistan; along with it is an important source of income and employment for the farming community of the country. However, low production was one of the causes of recent sugar crisis, besides the sugar cartel (Khan, 2006).

The main purposes of the present paper are (i) to study the sugarcane production particularly in Charsadda and in general in Pakistan, (ii) to identify the various conventional and non-conventional reasons of low sugarcane production and (iii) to make proper measurement to increase the level of sugarcane productivity in Pakistan. By increasing the sugarcane productivity, the surplus would be exhausted in the international market but in case it increases the amount of sugar in the form of gur and gur would be exported to neighboring countries of Central Asia in order to earn more foreign exchange and boost the process of economic development.

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<sup>1</sup>. Once planted, a stand of cane can be harvested many times; after each harvest, the cane sends up new stalks, called ratoons.

#### **BRIEF HISTORY OF SUGARCANE**

Conflicting claims are attributed to sugarcane origin. Some say that

sugarcane is a grass originally from tropical Southeast Asia. It is says that sugar in crystal form was presented some 2500 years ago in India. While it is also says that Arabs brought and sugar to the Mediterranean almost in the eighth century A.D and such as sugar was a part of the agriculture in Spain also. While some of the view that in ancient times, people migrating from the Indochina area to New Guinea encountered different types of wild sugarcane. It is also recorded that from about 800 B.C. people shifted from New Guinea to many Pacific Islands, and were engaged in sugar cultivation. Sugar later on also introduced in Indonesia, Philippines and Northern India. With the passage of time crude sugar was developed slowly by 400 B.C. and similarly the culture of cane widens gradually and arrived to Persia by 500 A.D. The Arabs brought sugarcane to Egypt due the Islamic Holy War and the Arab got success. Around 710 A.D., the Egyptians develop clarification, crystallization and refining. Likewise, across Northern Africa and into southern Spain sugarcane has been increased. It is stated that the large shipment of sugar arrived into England during 1319.

Sugarcane reached the Canary Islands in 1420, from where Columbus introduced it to the New World in 1493. Eventually, cane culture widens from Santo Domingo to across the whole World. Louisiana sugar reached during late 1700s. Indeed, fruits and honey were the most important sweet foods in the world until some 450 years ago. Then cane sugar became the sweetener of choice until the 19th century<sup>1</sup>.

#### **DATA AND METHODOLOGY**

In the present study both types of data primary and secondary have been used. For the collection of data, a comprehensive interviews schedule was designed to obtain relevant various information regarding type of sugarcane, nature of irrigation, varieties used, sources of agricultural information, cultivation and management of sugar crop, use of different inputs and use of pests/diseases etc.,. Before conducting the interviews, the main purpose and importance of the study was explained to the sample respondents and they were politely and convincingly persuaded to reply in an easy mode and almost 40 farmers were interviewed on face-to-face interview basis. In this regard ten (10) those farmers have interviewed which

were cultivating sugarcane on more than twenty (20) Jarab land, ten (10) farmers of 10 to 20 Jarab<sup>2</sup>, and such as twenty (20) farmers have interviewed which were cultivating sugarcane on less than ten (10) Jarab land. Further secondary data on sugar crops for different periods has also been taken from the Economic Survey of Pakistan (2006-07) in order to see the trend of the sugar cane area, production and yield in Pakistan.

### SUGARCANE PRODUCTION IN PAKISTAN

Pakistan grows almost one million hectares of sugarcane, more than all other cane producing countries except Brazil, China, Cuba, India and Thailand. Brazil was the world's largest producer of sugarcane during 2005. Hussain et al. (2006) mentioned that sugarcane crop is an important cash crop of Pakistan. It provides raw material to 77 sugar factories besides indigenous "Brown Sugar" cottage industry. The Punjab Province accounts for 60-65 % of the area under sugarcane. Crops like rice and cotton etc are major competitors for land use among agriculturists in that province. Other producing areas include the Sindh Province, which accounts for 25-30% of sugarcane land, the North

West Frontier Province about 10 %, and Balochistan, which accounts for less than 1 %. Due to higher yields, the share of Sindh Province in total sugar production is about 40 %. The following Table 1 shows the area and production of four provinces during last two years.

<sup>1</sup> See for detail study Wikipedia, encyclopedia

<sup>2</sup> One Jarab equal to four canal land

**Table 1: Area and Production of Sugarcane by Province**

Provinces	Year/Area (000, hectares)		Year/Production (000, metric tones)	
	2004-05	2005-06	2004-05	2005-06
Punjab	645.00	615.00	33048	30493
Sind	215.00	188.00	9368	9136
NWFP	106.00	104.00	4816	4683
Baluchistan	0.00	0.00	22.5	0.0
Total	966.00	907.00	47254.5	44312

Source: Ministry of Food, Agriculture and Livestock & FAS, Islamabad (2006)

Generally the harvesting period follows the pattern of many other Northern Hemisphere crops, beginning in November/December and ending in April/May. Planting may be made in autumn or spring, with autumn planting (September-October) and it will of course provide improved results on the basis of a longer growing season. Provinces like Punjab and NWFP generally plant in spring, and harvest later 8-10 months. In the Sindh Province most planting is in autumn, allowing growth for up to 16 months. Harvesting begins in October in Sindh,

November in Punjab and the NWFP, and continues until April or May. Sugarcane supports 76 sugar mills of

the country, which are working 75% of their capacity due to shortage of sugarcane (GAIN, 2006).

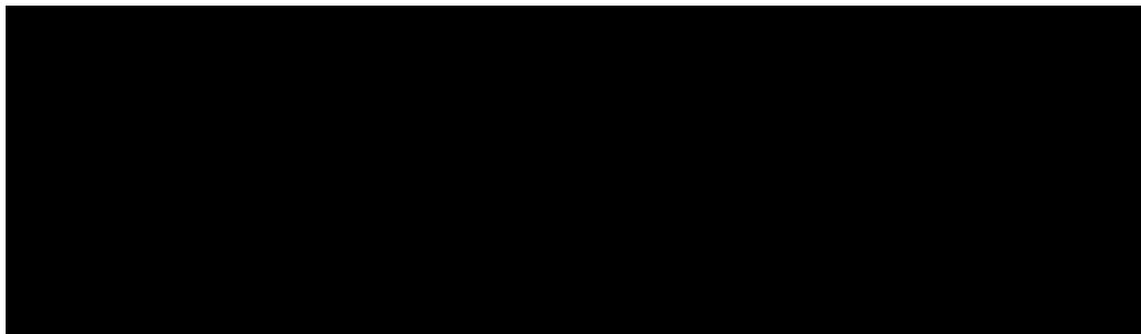
**Table 2 Area, Production and Yield of Sugarcane in Pakistan**

Years	Area (000Hectare)	Production (000 Tonns)	Yield (Kgs/Hec.)	Years	Area (000Hectare)	Production (000 Tonns)	Yield (Kgs/Hec.)
1990-91	884	35689	40720	1998-99	1155	55191	47784
1991-92	896	38865	43371	1999-00	1010	46333	45874
1992-93	885	38059	43024	2000-01	961	43606	45376
1993-94	963	44427	46144	2001-02	1000	48042	48042
1994-95	1009	47168	46747	2002-03	1100	52056	47324
1995-96	963	45230	46968	2003-04	1074	53419	49738
1996-97	965	41998	43521	2004-05	966	47254	48906
1997-98	1056	53104	50288	2005-06	907	44312	48856

*Source: Economic Survey of Pakistan, 2006-07*

The area, production and yield per hectare for the last sixteen years are given in the above Table 2. Table 2 revealed that area under sugarcane cultivation was 1100,000 hectares during 2002-03. While during 2004-05, sugarcane was sown on an area of 966,000 hectares and in 2005-06; the crop was sown on over 907,000 hectares. Sugarcane production for the year 2005-06 is estimated at 44.3 million tons

against the 47.2 million tons last year. Looking at both the figure-1 and figure-2, which shows the trends of areas, production and yield (kgs/hect.) of Pakistan from 1990-91 to 2005-06. Trends of both the figures are going to decrease, as the areas for cultivation decreasing, therefore in the result production and yield of sugarcane also decreasing.



**Figure-1**



**Figure-2**

### **SUGARCANE PRODUCTION IN NWFP**

Notwithstanding sugarcane remains an important cash crop in North West Frontier Province (NWFP) after tobacco. Although most of the crops are used for making refined sugar in the mills, still quite a sizeable output is used in manufacturing "GUR". Some of the quantity is retained as seed while cane tops are used as fodder for animals. Gur or brown sugar is traditionally used in black tea as a substitute of white sugar, in most parts of NWFP and the adjoining tribal areas. Sugarcane remains a cash crop for the agriculturists of Charsadda, Mardan, Peshawar and Swabi districts respectively. The major producing areas of NWFP sell their produce to mills. But for the past many years, agriculturists have started gur-making by small manufacturing units, locally called "Gaani". More the numbers of gannies

are comparatively greater in Charsadda district. The treatment at the hands of the mill owners has forced agriculturists to switch over to gur-making. These agriculturists allegedly suffer from hassles ranging from the issue of indents, short weighing to the delays in payments and low prices (Usafzai, 2005). They go for gur-manufacturing for of better returns as compared to that given by mills. Gur is not only enough to meet the needs of the people of NWFP and even of Pakistan but its surplus is exported to the Afghanistan and Russian States too.

### **FACTORS AFFECTING SUGARCANE PRODUCTION IN PAKISTAN**

Though a number of factors influencing the sugarcane productivity in Pakistan but since the following factors are the most important;

**Natural Factors:** Frost (extreme weather), Rainfall, Salinity and water logging, Temperature and humidity

**Agricultural and Policy Factors.**

Conventional planting methods/  
 Outdated technology  
 Defective seed varieties/low yielding varieties  
 Forestation around sugarcane fields  
 Early and late harvesting  
 Improper selection of land  
 Low soil fertility  
 No proper rotation of crops  
 Poor land preparation  
 Poor management of ratoon crop  
 Small holding  
 No or little education of the sugarcane growers about management practices.  
 Lack of irrigation facilities  
 Inadequate research and development in this field

**C. Economic Factors**

Paucity of sugar support price policy.  
 Poor condition of farmers  
 Unavailability of resources  
 Variation in prices  
 In addition nearly 95% of the agriculturists said during interview that besides the above mentioned factors causing low productivity of sugarcane, the following factors also affecting sugarcane productivity.

**Sugarcane diseases:** Due to sugarcane diseases the production is low and since

a few years ago the government of NWFP was providing the facility of air spray on sugarcane crop. But at present the government has withdrawn this kind of facility, while the poor agriculturists cannot afford the expensive pesticide and insecticides.

**High Price of Fertilizer Input:**

Fertilizer is an important input of sugarcane and actually the prices of fertilizer input are very high and pitiable agriculturists can not afford it.

**Lack of Credit:** Almost all agriculturists are facing the problem of finance on due time. Money required for land leveling, proper ploughing, sprays, fertilizer and others input.

Along with the above-mentioned causes another cause is majority of the agriculturists goes for the cultivation of hybrid maize crop because the productivity mentioned by the interviewers in term of income of the maize and other cash crops are very high if compare with sugarcane. It is another cause of low sugarcane production.

**DATA ANALYSIS AND DISCUSSION**

Since the prices paid by sugar mills owners to the agriculturists in the country at the rates Rs. 75-80 per 40

Kgs<sup>1</sup>. But generally the returns from gur production are also superior as compared to those obtained from the sugar-mills. While explaining the difference between the two prices, interviewer says that about 75 kg of gur is *obtained* from about 760 kg (19 mounds)<sup>2</sup> of sugarcane, which provide growers about Rs. 2300-2900. On the other hand, providing 760 kg of crop to mills earn only Rs. 1520 (19 mound x Rs.80) and as it is clear from these figures that the returns in gur making are almost high.

Almost 95 %<sup>3</sup> of the interviewers says that growers are at the receiving-end because of the absence of their representation at various government levels where unilateral decisions are taken by the authorities and organizations without consulting them". The agriculturists also recalled that in order to discourage gur production, the government promulgated the 'Power Crusher Licensing Amendment Ordinance', 2001 NWFP", under which 'Gur Gaanies' were registered for the purposes of documentation on payment of Rs. 500 as a fee and cane crushers of 12.5 horse power and above having karai (cooking pot) above 36 cubic feet. Gaanies with capacity of 330 kg's of gur

were required to obtain license on payment of Rs.50,000 per annum. Low productivity is also due to various taxes like abyana<sup>4</sup> paid by gur producers and there is about 20 % annual increase in abyana when compared to other provinces.

Further they say that any biased and one-sided decision by the government regarding gur production units would not only create unemployment but it will also add to the financial misery of the agriculturists. Notwithstanding the fact that gur can earn an attractive amount in foreign exchange through exports as it did in the past. Like growers of other crops, sugar cane growers of the province are also facing multiple problems. The prices of agricultural inputs are going out of the reach of agriculturists. These include fertilizers, pesticides, seeds, tractor charges, and diesel. The pesticides have become also too costly and also very fake. Many of the interviewers, says that the government should regularize and encourage gur production to improve returns from sugar cane crop and earn foreign exchange from exports. The growing prices of cash crops like vegetables, wheat and cotton etc have

further obstructed production of sugarcane.

### **CONCLUSION AND RECOMMENDATIONS**

The objective of this paper was to analyze the performance and various reasons for the low sugarcane production. The study was undertaken in District Charsadda (NWFP). Indeed Pakistan is an agrarian economy and agriculture is the backbone of Pakistan economy. Sugarcane crop is considered an important cash crop of Pakistan. It also forms essential items for industries like chipboard, paper, pharmaceuticals, juices, bakery products, sweets and chocolates, soft drinks and beverages etc. Sugarcane has been sown in the area of 907000 hectares and its production for the year 2005-06 is estimated 44312 tons.

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<sup>1</sup> While it is says that the prices paid by sugar mills owners in the NWFP province were much lower than those paid in other provinces. Such as in Punjab, agriculturists are paid at the rate of Rs.65 per 40 Kgs. In Sindh, price for this season remained between Rs.70-80 per 40 Kgs while in NWFP; the price remained at Rs.50-53 for the major part of the season and increased only recently to Rs.60 per 40 Kgs only after protest by agriculturists (These are 2004-05 sugarcane rates).

<sup>2</sup> Four (4) kgs gur is obtained from 40 Kgs (1 mound) sugarcane.

<sup>3</sup> The rest 5 percent agriculturist/farmers were not fully aware

<sup>4</sup> It is water tax

Pakistan grows almost one million hectares of sugarcane. The Punjab Province accounts for 60-65 % of the

area under sugarcane. Other producing areas include the Sindh Province, which accounts for 25-30 % of sugarcane land, the NWFP about 10 %, and Balochistan, which accounts for less than 1 %.

It has been observed that many of factors influencing the sugarcane productivity in the country such as; agricultural and policy factor are, improper selection and preparation of land, outdated technology, late planting, early and late harvesting, low yielding varieties, illiteracy, natural calamities, and lack of irrigation facilities, Similarly economic factors such as variation in prices, unavailability of resources for the growers, and lack of support price policy. In addition these factor also affecting sugarcane productivity such as, cultivation of hybrid maize crop, sugarcane diseases, high price of fertilizer input and lack of credit facilities. In addition it has found that the prices paid by sugar mills owners in the NWFP province were comparatively lower than those paid in other provinces. The returns from gur production are also better as compared to those obtained from the sugar-mills. Since about 75 kgs of gur is obtained from about 760 Kgs (19 mounds) of sugarcane, which provide growers about

Rs. 2300-2900. On the other hand, providing 760 Kgs of crop to mills earn only Rs.1520 (19 mound x Rs.80) and consequently in gur making, the returns are almost high. All of the interviewers, states that the government should encourage gur production to improve returns from sugar cane crop and earn foreign exchange from exports, which will increase economic growth of Pakistan.

A few suggestions are presented in the light of findings to improve the sugarcane production which is given below;

Proper, balanced and adequate use of farm inputs be insured.

Efficient use of water should be employed.

High yielding varieties with maximum sugar recovery should be introduced.

Sugar Mills should pay due concentration to small farmers and address their problems.

Sugar Mills should pay the payment in time to growers.

Support price for sugarcane should be increased.

Biological control of pests should be introduced.

Govt. should provide credit to the agriculturists.

Subsidies should be provided on basic input like fertilizers and pesticides etc.

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## THE EFFECTS OF COOPERATIVE LEARNING ON SELF-ESTEEM AND ACADEMIC ACHIEVEMENT OF THE STUDENTS

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### ABSTRACT

The study is an attempt to investigate effects of cooperative learning on self-esteem and academic achievement of the students. For this purpose a Self-esteem questionnaire was administered as pretest and posttest to the students in the control and experimental groups. In addition to the differences in self-esteem, students' test scores were also examined. Students in the experimental group were given cooperative learning lessons that were centered around the subject matter to be tested. Main focus was on strategies of structuring cooperative interactions and teaching students the skills needed to work effectively with others. Students in the control group were taught by the same teacher who used a "traditional" approach to instruction, consisting of teacher controlled class discussion. The results of the study indicate that Self-esteem increased at significant levels, for students who were exposed to cooperative learning as compared to students in a traditional classroom. Findings are sufficiently promising to warrant future serious consideration by teachers and researchers.

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### INTRODUCTION

How the students perceive and interact with one another is a neglected aspect of instruction. Much training time is devoted to helping teachers arrange appropriate interactions between students and materials (i.e., textbooks, curriculum programs, etc.), some time is spent on how teachers should interact with students, but how students should interact with one another is relatively ignored. It shouldn't be. How teachers structure student-student interaction patterns will have a lot to say about how well the students learn, how they feel

about school and the teacher or professor, how they feel about each other, and their self-esteem. There are three basic ways students can interact with each other as they learn. They can compete to see who is "best"; they can work individualistically on their own toward a goal without paying attention to other students; or they can work cooperatively with a vested interest in each other's learning as well as their own. Of the three interaction patterns, competition is presently the most dominant.

The research indicates that a vast majority of students view school as a competitive enterprise where students try to do better than the other students. This competitive expectation is already fairly widespread when students enter school and grows stronger as they progress through school. It is important that students learn to interact effectively in each of these patterns. But during cooperation among students where they celebrate each other's successes, encourage each other to do homework, and learn to work together regardless of ethnic backgrounds, male or female, bright or struggling, handicapped or not, is rare. In Pakistan where classes are overcrowded and students are facing situations where it is impossible to give individual attention to every student.

Cooperative learning approach and its appropriate interaction pattern is suited to the situation. The aim of present research was to test the educational utility of cooperative learning.

#### **STATEMENT OF THE PROBLEM**

The problem under investigation was to see the "effects of cooperative learning on self-esteem and academic achievement of the students".

The purpose of this study was to determine whether or not using cooperative learning teaching methods in a high school class would significantly increase students self-esteem and academic achievement. The study compared cooperative learning and traditional learning methods and their effect on academic self-esteem and achievement of students.

#### **SIGNIFICANCE OF THE STUDY**

Research on cooperative the purpose of this study was to determine whether or not using cooperative learning teaching methods in a high school class would significantly increase students' self-esteem and academic achievement. Learning is significant because it is close to human nature. In contrast to cooperative situations, competitive situations are ones in which students work against each other to achieve a goal that only one or a few can attain. In competition there is a negative interdependence among goal achievements; students perceive that they can obtain their goals if and only if the other students in the class fail to obtain their goals (Deutsch, 1962). Norm-referenced evaluation of achievement occurs. The result is that

students either work hard to do better than their classmates, or they take it easy because they do not believe they have a chance to win. In individualistic learning situations students work alone to accomplish goals unrelated to those of classmates and are evaluated on a criterion-referenced basis. Students' goal achievements are independent; students perceive that the achievement of their learning goals is unrelated to what other students do (Johnson & Johnson, 1989). The result is to focus on self-interest and personal success and ignore as irrelevant the successes and failures of others.

There is a long history of research on cooperative, competitive, and individualistic efforts. Since the first research study in 1898, nearly 600 experimental studies and over 100 correlational studies have been conducted (Johnson & Johnson, 1993). The multiple outcomes studied can be classified into three major categories: achievement/ productivity, positive relationships, and psychological health. The research clearly indicates that cooperation, compared with competitive and individualistic efforts, typically results in (a) higher achievement and greater productivity, (b) more caring,

supportive, and committed relationships, and (c) greater psychological health, social competence, and self-esteem. The positive effects that cooperation has on so many important outcomes makes cooperative learning one of the most valuable tools educators have.

According to (Fetsch, & Yang, 2001) cooperative learning is the instructional use of small groups so that student's work together to maximize their own and each other's learning. The idea is simple. Class members are organized into small groups after receiving instruction from the teacher. They then work through the assignment until all group members successfully understand and complete it. Cooperative efforts result in participants striving for mutual benefit so that all group members gain from each other's efforts (Your success benefits me and my success benefits you), recognizing that all group members share a common fate (We all sink or swim together here), knowing that one's performance is mutually caused by oneself and one's colleagues (We can not do it without you), and feeling proud and jointly celebrating when a group member is recognized for achievement (We all congratulate you on

your accomplishment!). In cooperative learning situations there is a positive interdependence among students' goal attainments; students perceive that they can reach their learning goals if and only if the other students in the learning group also reach their goals. (Johnson & Johnson, 1989), say a team member's success in creating a multi-media presentation on saving the environment, for example, depends on both individual effort and the efforts of other group members who contribute needed knowledge, skills, and resources. No one group member will possess all of the information, skills, or resources necessary for the highest possible quality presentation.

The first and most important element in structuring cooperative learning is positive interdependence. Positive interdependence is successfully structured when group members perceive that they are linked with each other in a way that one cannot succeed unless everyone succeeds. Group goals and tasks, therefore, must be designed and communicated to students in ways that make them believe they sink or swim together. When positive interdependence is solidly structured, it

highlights that (a) each group member's efforts are required and indispensable for group success and (b) each group member has a unique contribution to make to the joint effort because of his or her resources and/or role and task responsibilities. Doing so creates a commitment to the success of group members as well as one's own and is the heart of cooperative learning. If there is no positive interdependence, there is no cooperation.

The second basic element of cooperative learning is to promote interaction, preferably face-to-face. Students need to do real work together in which they promote each other's success by sharing resources and helping, supporting, encouraging, and applauding each other's efforts to achieve. There are important cognitive activities and interpersonal dynamics that can only occur when students promote each other's learning. This includes orally explaining how to solve problems, teaching one's knowledge to others, checking for understanding, discussing concepts being learned, and connecting present with past learning. Each of those activities can be structured into group task directions and procedures. Doing so

helps ensure that cooperative learning groups are both an academic support system (every student has someone who is committed to helping him or her to learn) and a personal support system (every student has someone who is committed to him or her as a person). It is through promoting each other's learning face-to-face that members become personally committed to each other as well as to their mutual goals.

The third basic element of cooperative learning is individual and group accountability. Two levels of accountability must be structured into cooperative lessons. The group must be accountable for achieving its goals and each member must be accountable for contributing his or her share of the work. Individual accountability exists when the performance of each individual is assessed and the results are given back to the group and the individual in order to ascertain who needs more assistance, support, and encouragement in learning. The purpose of cooperative learning groups is to make each member a stronger individual in his or her right. Students learn together so that they subsequently can gain greater individual competency.

The fourth basic element of cooperative learning is teaching students the required interpersonal and small group skills. Cooperative learning is inherently more complex than competitive or individualistic learning because students have to engage simultaneously in task work (learning academic subject matter) and teamwork (functioning effectively as a group). Social skills for effective cooperative work do not magically appear when cooperative lessons are employed. Instead, social skills must be taught to students just as purposefully and precisely as academic skills. Leadership, decision-making, trust building, communication, and conflict-management skills empower students to manage both teamwork and task work successfully. Since cooperation and conflict are inherently related (Johnson & Johnson, 1993) the procedures and skills for managing conflicts constructively are especially important for the long-term success of learning groups.

The fifth basic element of cooperative learning is group processing. Group processing exists when group members discuss how well they are achieving their goals and maintaining effective working

relationships. Groups need to describe what member actions are helpful and unhelpful and make decisions about what behaviors to continue or change. Continuous improvement of the processes of learning results from the careful analysis of how members are working together and determining how group effectiveness can be enhanced.

## **METHOD**

A total of fifty (N=50) secondary students participated in the study, twenty-five students in the control group and twenty-four students in the experimental group. The duration of the study was four weeks and the cooperative learning procedure followed by (Johnson and Johnson, 1981) was used. Self-esteem questionnaire developed by (Heatherton & Polivy, 1991) was administered as pretest and posttest to the students in the control and experimental groups. It has twenty items to be answered by the respondents. Each item in the scale was scored from 5 to 1. While five indicating extremely, four indicating very much, three indicating somewhat, two indicating a little bit and one indicating not at all, carrying score

of 5,4,3,2, and 1 respectively, detail is given in table # 1 and # 3.

In addition to the differences in academic self-concept, students' test scores were also examined. Tests, which are routinely used by the teacher to measure academic achievement of subject area, were given to both the control and experimental groups, before and after treatment, detail is given in table # 2 and # 4. During the time between the pre test and posttests, the experimental group received the experimental treatment. Students in the experimental group were given cooperative learning lessons that were centered around the subject matter to be tested. Main focus was on strategies of structuring cooperative interactions and teaching students the skills needed to work effectively with others (communication, leadership, trust building, and conflict resolution). The cooperative learning teams worked in small groups of three or four students. The lessons were designed so that in order to achieve a particular goal, students had to work as a team. They were not competing against each other and their seats were arranged so that they were working together in close

proximity. The students in the experimental group were randomly assigned to subgroups. In short, students worked with other students in a structured environment to Learn the given material.

Students in the control group studied the same subject matter during the same time span. However, they did not use any cooperative learning activities. They were taught by the same teacher who used a "traditional" approach to instruction, consisting of teacher controlled class discussion, followed by individual worksheets with no student-to-student interaction.

### Design of the Study

For this study, a pretest-posttest quasi-experimental design was used.

O O (Control Group) O X O (Experimental Group)

### Data Analysis technique

A t-test was used to analyze the test results before and after experimental treatments.

### PRESENTATION AND ANALYSIS OF DATA

Following is the analysis of data.

**Table1: Difference on self esteem of control and Experimental groups on pre-test.**

Group	N	Mean	Df	t-value	Sig: level
Experimental	25	52.40	48	0.51	0.01
Control	25	51.93			

Table shows that before treatment the mean score of experimental group on

self esteem scale is 52.40 and mean score of control group is 51.93, while t-value is 0.51, which is not significant at 0.01 level of significance. The null hypothesis that there is no significance difference in mean scores of students in experimental group and control group is, there fore accepted.

**Table 2: Difference in academic achievement of control and Experimental groups on pre-test**

Group	N	Mean	Df	t-value	Sig: level
Experimental	25	56.33	48	0.51	0.01
Control	25	56.91			

Table shows that mean score of experimental control group on pre test regarding academic achievement is 56.33 and mean score of control I group is 55.01 while t-value is 0.49, which is not significant at 0.01 level of significance. The null hypothesis that there is no significance difference in mean scores of students in experimental group and control group is, there fore accepted.

**Table 3: Difference in self esteem of experimental and control group on post test.**

Group	N	Mean	Df	t-value	Sig: level
Experimental	25	67.86	48	4.36	0.01
Control	25	54.59			

Table shows that mean score of experimental group on self esteem scale is 67.86, and mean score of control group is 54.59 while t-value is 4.36 which is not significant at 0.01 level of significance. The null hypothesis that there is no significance difference in mean scores of students in experimental group and control group is, there fore rejected.

**Table4: Difference in academic achievement of control and Experimental groups on post-test.**

Group	N	Mean	Df	t-value	Sig: level
Experimental	25	69.21	48	5.64	0.01
Control	25	57.43			

Table shows that mean score of experimental group on post test regarding academic achievement is 69.21 and mean score of control group is 57.43 while t-value is 5.64, which is not significant at 0.01 level of significance. The null hypothesis that there is no significance difference in mean scores of students in experimental group and control group is, there fore rejected.

## RESULTS

The results of this study indicate that Self-esteem increased at significant levels, for students who were exposed to

cooperative learning as compared to students in a traditional classroom. In addition to the differences in self-esteem, students' test scores were also examined. A statistical analysis of these test scores showed a significant increase for the cooperative learning group. This significant increase in test scores reinforces the notion that cooperative learning teaching strategies improve academic achievement. By comparing a cooperative learning teaching strategy with a traditional teaching strategy, the study demonstrated that a cooperative learning teaching strategy promotes a greater sense of self-esteem while improving academic achievement

## DISCUSSION

There appears to be a positive correlation between self-esteem and academic achievement. The research also indicates a positive correlation between cooperative learning and academic achievement. Several studies suggest that there is an association between social interdependence, promoted by cooperative learning, and self-esteem. Research has indicated that there is an association between the type of learning environment in respect to social interdependence, and levels of

self-esteem. Some researchers have postulated that working together with peers to achieve common goals has significant and considerable impact on self-esteem compared to competitive or individualistic experiences. Research also shows that students who work in groups develop an increased ability to solve problems and evidence greater understanding of the material (Davis, 1993). Perhaps beginning with modest collaborative assignments and supplementing class work with additional readings will resolve some of the conflicts between coverage and depth. Students, with the proper help, can be guided toward greater autonomy and take on a greater responsibility for their own education if instructors provide them with useful, engaging, and relevant tasks to accomplish with their peers.

According to (Astroth, 1994) and (McDaniel, 1998) When examining the research comparing students learning cooperatively, competitively, and individualistically, a very interesting paradox develops. Common practice in schools today has teachers striving to separate students from one another and have them work on their own. Teachers

continually use phrases like, "Don't look at each other's papers!", "I want to see what you can do, not your neighbor!" or "Work on your own!" Having students work alone, competitively or individualistically, is the dominant interaction pattern among students in classrooms today. The paradox is that *the vast majority of the research comparing student-student interaction patterns indicates that students learn more effectively when they work cooperatively.*

Relationships between cooperative and competitive orientations and five self-reported competencies were explored by (Norland & Bennett, 1993) and (Weber & McCullers, 1986) Empirical evidence from these studies suggests that providing more Cooperative Learning experiences to students than Competitive Learning experiences is associated with higher scores in Behavioral Conduct, Physical Appearance, Scholastic Competence, and Social Acceptance--all of which are associated with children's perceived personal competencies. The more competent children see themselves, the greater the likelihood that they will feel positive self-esteem and that they will behave in socially desirable ways. The

present study supports the above findings.

In the literature on competition and cooperation, two reports are outstanding. The first is a meta-analysis of 122 studies of the effects of cooperative, competitive, and individualistic goal structures on achievement (Johnson, Maruyama, Nelson, & Skon, 1981). The researchers found that:

1. Cooperation is considerably more effective than interpersonal competition and individualistic efforts in promoting achievement and productivity and
2. Cooperation without inter group competition seems to promote higher achievement and productivity than cooperation with inter group competition.

With all the data that is available in this study it is clear that results are consistent with research findings of (Weber & McCullers, 1986) they discovered facilitating effect of cooperative learning on students self esteem and academic achievement. Our research and the research of many others have established that having students work together cooperatively is a powerful way for them

to learn and has positive effects on the classroom climate. Teachers in classrooms from preschool through graduate school have verified this. However, the importance of emphasizing cooperative learning groups in classrooms goes beyond achievement, acceptance of differences, and positive attitudes. The ability of all students to learn to work cooperatively with others is the keystone to building and maintaining stable marriages, families, careers, and friendships. Being able to perform technical skills such as reading, speaking, listening, writing, computing, problem-solving, etc., are valuable but of little use if the person cannot apply those skills in cooperative interaction with other people in career, family, and community settings. The most logical way to emphasize the use of student's knowledge and skills within a cooperative framework, such as they will meet as members of Pakistani society, is to spend much of the time learning those skills in cooperative relationships with each other. We need to get back to the basics, reconcile school practice with current research, and encourage a healthy portion of instruction to be cooperative.

## RECOMMENDATIONS

- Greet each student by name and use names frequently.
- Don't let a student feel as if he or she is Invisible.
- Individualize, as much as possible, lesson plans on the basis of student goals, aptitudes, interests, abilities, learning styles and speeds.
- Use mistakes and failures as positive learning experiences.
- Use grades as demonstrations of mastery, not to separate or categorize students.
- Assign final grades only upon mastery of material.
- Group students heterogeneously.
- Use cooperative and collaborative learning.
- Create a sense of cohesiveness and belonging for each group of students.
- Encourage democracy in the classroom and in the school.
- Encourage student participation
- All programming and competitive events should be revisited and modified to correspond with current findings in research, especially related to competition and cooperation.

-Leaders are urged to provide a system that rewards cooperation even more than individual competition at county, state, and national fairs.

-All events within educational institutions should be research based and curriculum based, related to the identified developmental needs of youth.

-All students (especially boys) should be provided more cooperative learning experiences and fewer competitive learning experiences.

-Future researchers are encouraged to use the dozen items in the Appendix along with (Harter, S. 1982).Self-Perception Profile for Children (SPPC) to document program impacts and changes in children's Unconditional Parental Support, Cooperative Learning Orientation, Competitive Learning Orientation, Scholastic Competence, Social Acceptance, Athletic Competence, Physical Appearance, and Behavioral Conduct. This should be done after providing adequate training to youth educators on how to coach children to select only one of the four alternatives in Harter's forced-choice format.

-Specialists, and volunteers are urged to pay attention to children who score low

in both competitive and cooperative learning orientations and to encourage them to engage with peers.

-Development leaders, specialists, and volunteers are encouraged to notice the child who scores excessively high in either competitive or cooperative orientation and to model more of a balance between the two orientations to teach the use of both life skills as appropriate.

-Parents are urged to continue to provide their unconditional parental support to their children. If they are supported either way, they grow in self-competence and self-worth.

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# SELECTED VARIABLES DIFFERENCES IN THE ROLE OF HEADS OF TEACHING DEPARTMENTS IN THE CHANNEL OF COMMUNICATION AT POSTGRADUATE LEVEL

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## ABSTRACT

This paper investigates selected variables differences in the role of heads of teaching departments in the channel of Communication at postgraduate level. The population of the study constituted all the heads of teaching departments of universities and postgraduate colleges in N.W.F.P, Pakistan. The researcher developed a 27 items questionnaire for data collection. Questionnaire was personally administered by the researcher. T-test was used for data analysis. The major finding of the study is: No significant difference was found between the opinions of heads of teaching departments of postgraduate colleges and heads of universities' teaching departments, the opinions of heads having Ph.D degree and non-Ph.D heads, the views of heads of 30 or below 30 years of experience and heads of more than 30 years of experience, the opinions of heads of 50 or below 50 years of age and heads of upper 50 years of age, regarding their role in the channel of communication.

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## INTRODUCTION

Communication is defined as a process by which we assign and convey meaning in an attempt to create shared understanding (Wikipedia, 2001). Effective communication necessitates active listening, understanding, empathy, and feedback. Communication is defined as the “essence of organizations” (Katz and Kahn, 1978).

The principal communication channels are oral, written and electronic mail. Each of these channels has certain characteristics that can either help or hinder communication, depending on the

circumstances, the message, and the sender and audience.

Oral communication allowed people to overcome the initial barriers of time and space imposed by a nonverbal world. Most of the people working in organizations spend most of their time in speaking and listening. Much of this oral communication is preliminary and concerns decision making. Oral communication helps build organizational morale. People in the organization discuss their work related problems and satisfy their social needs. In face to face situations people have the

opportunities to discuss an issue, receive immediate feedback on their comments and change their opinions or messages accordingly. The drawback of oral communication is that a message can easily be distorted. Senate is a powerful decision making body in universities. All the important decisions are made in senate meetings. Different communication channels exist during senate meetings. One of the most important channels of communication is dialogue. Miller (2007) noted that multiple dialogues occur in senate meeting at the same time, and that consensus and teams of individuals are naturally arising. Communication channels of senate were correlated with voting behaviors regarding legislation, motions, resolutions, bills, and other proclamations.

Writing facilitates the transfer of meaning across the barriers of time and space. It provides a relatively permanent record of information. Written documents are easy to store, retrieve and transmit. Writing allows a sender to prepare a message carefully at a convenient time of his or her choosing and allows a receiver to read it at his or her convenience. The drawback of writing is that it is a much slower

channel of communication as compared to nonverbal or oral channel. Both academics and administrators suggested 10 new channels of communication in Nigerian Universities: (1) Regular meetings between teachers and administrators. (2) Provision of telephones/intercoms for administrators and teachers.(3) Regular university bulletin. (4) Instrument for assessing academics' performance in the class. (5) Lecturer-Student information guide. (6) Academic staff welfare program. (7) Information centre for academics. (8) Opinion boxes for academic staff. (9) Comprehensive manual on academic work role. (10) Special complaint committee on academic staff welfare (Anyakoha et al, 1999). There are seven factors, which influence the academics' awareness and utilization of communication channels: (1) Religious affiliation. (2) Personal relationship. (3) State/ethnic origin/tribe. (4) Academic's (female) husband on campus. (5) Academic married to senior administrative staff. (7) Rank of female academic's husband. (8) Academic's desire to acquire information (Anyakoha et al, 1999).

For achievement of goals, colleges must keep their publics well informed through

the establishment of various communities or groups providing opportunities for college members and other interested stakeholders to participate in decision making. They must provide a good system of information sharing (Obondoh, and Adala, 2001). Women administrators perceived that they did not experience apparent gender discrimination in communicating with superiors, subordinates, and other institutions (Senemoglu, 2007). Communication satisfaction and organization commitment are closely related. Varona (1996) stated that explicit positive relationship existed between communication satisfaction and employees' organizational commitment. Schools' teachers were more satisfied with communication practices as compared to employees of hospital and food factory. Similarly supervisors were more satisfied with the overall communication practices as compared to subordinates. Access to information and multiple channels of communication increase job satisfaction in employees. Results indicate that workers with access to information have more job satisfaction than those who have not access to information (Adeshina,

2002). The Organizational Assimilation theory attempts to explain how new comers assimilate into the organization by using communication. Three stages occur when an individual enters a new organization. These stages are anticipatory socialization, the encounter stage and metamorphosis. An individual socialization into an organization determines his/her success (Jablin, 1982).

Electronic mail is fast and inexpensive. The use of electronic mail has become increasingly commonplace and important in corporate and institutional environment. E-mail is a rich medium of communication. The richness of this medium of communication is determined by different factors. Schmitz and Fulk (1991) study found:

*“(a) Perceived electronic mail richness (1) varied across individuals and (2) co varied with relational social influences and with media experience factors; (b) perceived electronic mail richness predicted individuals' electronic mail assessments and usage; (c) social influences of colleagues had pervasive effects on others' media assessments”.*

E-mail can be used for exchange of different kinds of information for different purposes. As Haythronthwaite

and Wellman (1998) pointed out that e-mail was used for affective, socialable interaction, as well as for instrumental and work exchange. Electronic mail can be sent to a group of people as conveniently as to one person. Electronic group mail may affect group behavior in an organization. Finholt and Sproull (1990) commented as:

*“The electronic group at work is a new social phenomenon that may contribute importantly to organizational behavior.”*

It is generally believed that electronic communication facilitates organizational communication. As Singarella et al (1993) indicate:

*“A significant positive impact of E-mail was found relative to other forms of communication (e.g., paper, phone) with regard to E-mail messaging, response rates, influence, value, formality, perceptions, errors in communication, cost-effectiveness, communication style, and other factors.”*

The forms of communication affect performance ratings in an organization. As Rice (1994) states that there is negative correlation between forms of communication and performance ratings. He (Rice, 1994) further states that it does not matter how much one uses electronic mail system, but how he is positioned in

that system structure context, may affect R&D performance. Hacker et al (1998) indicated that there were strong differences among electronic mail users' attitudes based on their job position. They (Hacker, Goss, Townley and Hoton, 1998) further stated that those who used electronic mail more frequently had more positive attitude than those who less use it. Electronic mail usage is a new trend in an organization. Therefore, young employees use electronic mail more frequently than old ones. As Mitra et al (1999) pointed out those young faculty members, who have greater familiarity with computer, use electronic mail more frequently than old ones with traditional communication styles. Men and women are both the users of e-mail. Gender variable does not affect the use of electronic mail. Gefer and Straub (1999) elaborate that men and women do not differ in the use of e-mail but they differ in their perception.

#### **STATEMENT OF THE PROBLEM**

The study was to investigate the selected variables differences in the role of heads of teaching departments in the channel of communication at postgraduate level.

## **OBJECTIVES OF THE STUDY**

1. To know the difference between the opinions of heads of postgraduate colleges and heads of universities teaching departments heads, heads having Ph. D degree and Non Ph. D, regarding their role in the channel of communication at postgraduate level.
2. To know the difference between the opinions of heads having 30 or less than 30 years of experience and heads having more than 30 years of experience, heads of 50 or less than 50 years of age and heads of more than 50 years, regarding their role in the channel of communication at postgraduate level.

## **HYPOTHESES**

1. There is no significant difference between the opinions of heads of teaching departments of postgraduate colleges and heads of universities teaching departments, heads having Ph.D degree and non Ph. D heads, regarding their role in the channel of communication at postgraduate level.

2. There is no significant difference between the opinions of heads having 30 or less than 30 years of experience, heads of 50 or less than 50 years of age and heads of more than 50 years of age, regarding their role in the channel of communication at postgraduate level.

## **DELIMITATION OF THE STUDY**

The study was delimited to only three public sector universities and seven postgraduate colleges in N.W.F.P, Pakistan.

## **LIMITATIONS OF THE STUDY**

- i. All public sector universities and postgraduate colleges could not be included in the study.
- ii. Private sector universities were excluded from the study.
- iii. Only questionnaire as a research instrument for data collection was used.

## **METHODOLOGY OF THE STUDY**

It was a descriptive study. The population of the study constituted all the heads of teaching departments of universities and postgraduates colleges in N.W.F.P, Pakistan. The researcher developed a 27 items questionnaire for data collection. The researcher studied relevant literature for the development of

questionnaire. Research supervisor and experts in social sciences were consulted for the sake of validation of the scale. For reliability, a dry run of the scale was conducted. Cronbach' Alha was achieved as high as 0.937. Questionnaire

was personally administered by the researcher at local level and mailed to outstation respondents. t-test was utilized as a statistical technique for data analysis.

**RESULTS**

**TABLE 1 Difference between the opinions of postgraduate colleges' heads and universities' teaching departments' heads on their role in the channel of communication**

Respondents	Strength	Mean	SD	d.f	t- Stat	t Critical two-tail
Postgraduate colleges' heads	11	121.4	6.39	22	0.155	2.07
Universities heads	36	121.8	9.47			

Since t-Stat 0.155 is less than t Critical two-tail 2.07, so null hypothesis is accepted. This means that there is no significant difference between the opinions of postgraduate colleges

teaching departments heads views and universities' teaching departments heads regarding their role in the channel of communication at postgraduate level.

**TABLE 2 Difference between the views of heads having Ph.D degree and non Ph.D heads on their role in the channel of communication at postgraduate level**

Respondents	Strength	Mean	SD	d.f	t- Stat	t Critical two- tail
Ph.D	15	121	12.87	16	0.159	2.119
Non Ph.D	32	121.580	6.59			

Since t Statistic, 0.159 is less than t Critical two- tail, 2.119, so null hypothesis is accepted, means that there is no significant difference between the

views of Ph.D and non Ph.D heads about their role in the channel of communication at postgraduate level.

**TABLE 3 Difference between the views of heads having 30 or below 30 years of experience and heads having more than 30 years of experience on their role in the channel of communication.**

Respondents	Strength	Mean	SD	d.f	t-Stat	t Critical two-tail
Heads with 30 or below 30 years of experience	37	122.416	7.56	9	0.81	2.262
Heads with more than 30 years of experience	10	118.77	12.90			

Since t-Statistic, 0.81, is less than t Critical two-tail, 2.262, so null hypothesis is accepted, This means that there is no significant difference between the opinions

of heads with 30 or below 30 years of experience and heads with more than 30 years of experience.

**TABLE 4 Difference between the opinions of heads of 50 or below 50 years of age and heads of more than 50 years of age on their role in the channel of communication**

Respondents	Strength	Mean	SD	d.f	t-Stat	t Critical two-tail
Heads of 50 or below 50 years of age	26	123.48	6.85	31	1.769	2.039
Heads of above 50 years of age	21	118.7	10.40			

Since t-Stat 1.769 is less than t Critical two-tail 2.039, so null hypothesis is accepted, This means that there is no significant difference between the opinions of heads of 50 or below 50 years of age and heads of above 50 years of age.

## DISCUSSION

The heads of teaching departments play a very important role in the promotion of communication. They use all available channels of communication. They use verbal, written, and electronic channels of communication. The heads of teaching departments usually use face-to-face channels of communication. However, some departments heads prefer formal channels of communication. Electronic mail is the fast channel of communication. It is widely used in universities and postgraduate colleges. The heads of teaching departments do not depend alone on electronic mail. They use written communication along electronic mail to ensure accuracy. Written communication is very old channel of communication. It is most frequently

used by all organizations. A formal organization cannot exist without written communication. In universities and postgraduate colleges, all official information is transmitted through written communication. Hierarchical communication exists in every organization. By flattening communication hierarchy, a leader can easily achieve shared vision (Farmer et al, 1998). Communication in organization is affected by job satisfaction and organizational climate. Research showed that certain dimensions of organizational communication were highly related to both organizational climate and job satisfaction (Muchinsky, 1977). There was no significant difference between the opinions of heads of teaching departments regarding promotion of communication by age, qualification and experience. Communication can improve job satisfaction of workers. Accuracy of information received and openness of superiors to workers are two important communication patterns to job satisfaction (Udo-In yand, 1991).

Learning of communication skills is very important in educational institutions. Communication skills' course is taught in some universities. Female students' attitude was more positive towards communication skills learning and tended to think their communication skills needed improving (Rees and Sheard, 2002).

### CONCLUSION

The role of heads of teaching departments in the channel of communication is very important. They use all available channels of communication to promote downward, upward and horizontal communication in universities and postgraduate colleges. They use face-to-face and written channels of communication to communicate with their subordinates, superordinates and counterparts. The heads provide their subordinates with opportunities to discuss their problems with them. They also keep channels of communication open with their superordinates and counterparts. There was no significant difference between the opinions of postgraduate colleges teaching departments' heads and universities teaching departments heads about their role in the channels of communication. It is concluded that they

have similar views about their role in the channels of communication. There was no significant difference between the views of Ph.D and non-Ph.D heads regarding their role in the channels of communication. There was no significant difference between the opinions of heads about their role in the channels of communication by age and experience. Demographic variables have no effects on the role of heads of teaching departments in the channels of communication. The heads of teaching departments play a positive role in the channel of communication.

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**Appendix A**

**QUESTIONNAIRE FOR HEADS**

Age \_\_\_\_\_ Sex: Male / Female

Name of the college/university \_\_\_\_\_ Name of the department \_\_\_\_\_

Designation: Professor \_\_\_\_\_ Associate Prof \_\_\_\_\_ Assistant Prof \_\_\_\_\_ Lecturer \_\_\_\_\_

Qualification: Ph.D \_\_\_\_\_ M.Phil \_\_\_\_\_ Master \_\_\_\_\_

Length of Service in the present department: (In Years).

Experience as a chairman/chairperson in the present department \_\_\_\_\_ (In Years).

*Note: "A" stands for Always, "F" for frequently, "O" for occasionally, "S" for Seldom, "N" for Never. Please (✓) tick the most appropriate answer,*

S.No	Statements	A	F	O	S	N
1	I call meetings of teachers.					
2	I like to distribute agenda of the meeting in advance.					
3	I make every effort to provide favorable environment for faculty meetings.					
4	I provide information regarding rules and regulations governing service of the employees in staff meetings					
5	I notify whatever is related to the faculty.					
6	I keep aware my colleagues about the decisions taken in the meetings of the heads of teaching departments.					
7	I share information received from the high-ups with teachers.					
8	I provide opportunity to discuss various issues with my colleagues.					
9	I seek views of the teachers on different issues.					
10	I do not call teachers to discuss any particular issue.					
11	I encourage teachers to communicate whatever they want to communicate.					
12	I do not keep channels of communication open.					
13	I use both formal and informal ways of communication.					
14	I favor establishing effective channels of communication with all concerned.					
15	I listen to my colleagues whenever they have something to discuss it to me.					
16	I invite all concerned to give me feedback.					
17	I allow faculty members to meet and discuss their problems with me.					
18	I hesitate to initiate dialogues with my colleagues.					
19	I conceal information from my fellows.					
20	Participation of staff members in framing institutional plans is invited by me.					
21	I convey suggestions of my colleagues to high ups.					
22	I keep authorities informed of my colleagues' performance.					
23	I do not exchange views with my counterparts about the promotion of educational activities.					
24	I let my colleagues to seek information from every source.					
25	I believe in free and frank discussions on every matter related to educational enterprise.					
26	I mind when someone is communicating something to me.					
27	I believe in providing fair chance of participation to every member in group discussion.					

## **APPOINTMENT OF TEMPORARY JUDGES IN SUPERIOR COURTS OF PAKISTAN: A THREAT TO INDEPENDENCE OF JUDICIARY**

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### **ABSTRACT:**

One of the ideals of the Objectives Resolution 1949 is that independence of the judiciary shall fully be secured. The constitutional guaranty and protection of the services, salaries and privileges of the judges is one of the essential elements required to achieve this objective. The constitution of Pakistan contains some provisions under which judges of the Supreme Court and High Courts are appointed on temporary basis, even against permanent vacancies. In this paper the constitutional provisions as well as the relevant rulings of the Supreme Court are examined and analyzed. The adverse effect of the practice of appointing temporary judges on judicial independence is studied. The draw backs of having temporary judges in the superior courts are discussed. Pakistan's judicial and political history gives the temptation to say that the constitutional provisions allowing appointment of temporary judges are detrimental to the judicial independence in Pakistan. Amendments in such constitutional provisions are suggested to 'fully secure' independence of judiciary.

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### **INTRODUCTION:**

It is a fundamental principle that no judiciary can function effectively unless their tenures and conditions of services, their salaries and privileges are guaranteed either by constitution or statute. To check unauthorized exercise of powers effectively judges must be beyond the reach of those who would transfer or remove them because of their decision. Full protection to service and salary of judges is one of the basic conditions required for truly independent judiciary. So service status/condition is of paramount importance to ensure independence and credibility of the

judiciary as well as public confidence in the judiciary.

In Pakistan the courts are broadly divided into two categories: constitutional courts and ordinary courts which are also known as superior courts and lower courts respectively. The superior judiciary includes the Supreme Court, the Federal Shariat Court and the High Court. The superior courts' judges are appointed into four different categories: permanent, acting, ad hoc, and additional. The last three categories may collectively be called as temporary judges of the superior judiciary. Permanent judges as well as the Chief

Justices of the Supreme Court, the High Court and the Federal Shariat Court are appointed under Articles 177, 193, and 203-C of the Constitution of Pakistan 1973 respectively. This paper is to study the impact of the temporary judges of the superior judiciary on the independence of judiciary.

**Appointment of Acting Judges in the Supreme Court:** At any time when the office of a judge is vacant or he is absent or is unable to perform the function of his office due to any other cause, the President may under Article 181 of the Constitution appoint a judge of a High Court as acting judge of the Supreme Court if he is qualified for appointment as a judge of the Supreme Court as per Article 177 of the Constitution.

**Appointment of Ad hoc judges in the Supreme Court:** If at any time it is not possible to hold or continue sitting of the Supreme Court for want of quorum or for any other reason it is necessary to increase temporarily the number of judges of the Supreme Court, ad hoc judges/judge may be appointed under Article 182 of the Constitution.

The language of Article 182 provides different grounds than the grounds under Article 181 of the Constitution. The

grounds under Article 181 are vacancy in office and inability to perform the functions whereas ground under Article 182 is want of quorum and necessity to increase temporarily the number of the judges of the Supreme Court. The language of both Articles indicates that they provide for the appointment of judges to meet the temporary situation. Unfortunately the letter and spirit of these constitutional provisions were not correctly followed or the same were for the past many years, consciously misused or misapplied and permanent vacancies were usually filled by acting/ad hoc appointments who continued for years as temporary judges.

**Additional Judges of the High Courts:** Additional judges in the High Courts are appointed under Article 197 of the Constitution. This Article is more detrimental to the independence of the judiciary and more misapplied and misused than Articles 181 and 182. Under Article 197 an additional judge of a High Court may be appointed by the President under the following circumstances:

- i. When the office of a judge of a High Court is vacant; or

- ii. When a judge of a High Court is absent from or is unable to perform the functions of his office due to any other cause; or
- iii. When for any other reason, it is necessary to increase the number of a Judges of a High Court.

The qualifications for appointment as an additional judge under Article 197 are similar like appointment of a permanent judge under Article 193. An additional judge is appointed for such period as the President may determine. After the lapse of such period, the President may extend the period. In case the period is not extended or the appointment is not made under Article 193, the additional judge shall relinquish the charge of his office.

It may be noted that an additional judge appointed under Article 197 and permanent judge of a High Court appointed under Article 193, as far as, powers, jurisdictions, functions, pay, privileges, duties and obligations are concerned, are at par; the only different is of the service tenure.

**Background of the Appointment of the Additional Judges:** The concept and practice of appointment of a judge who is member of superior judiciary for a short and conditional duration is non

existent in the United Kingdom from where we have inherited the present legal system. The comments of Taj Bahadur Sapru - a famous advocate cum politician of early days of India - on the practice of appointment of additional or acting Judges are noteworthy: "I would add that practice of appointing additional and temporary judges should be definitely given up. When I said at the Round Table Conference (there were three Round Table Conferences held in London in 1930s between the British Government and Political Parties from India to agree on a constitutional formula for India) that there were acting, additional and temporary judges in India, some of the English lawyers not accustomed to Indian law felt rather surprised. I am also of the opinion that temporary or acting judges do greater harm than permanent judges" (Rao, 1968).

The constitutional history of Pakistan suggests that the provision of appointment of additional judges in High Courts were provided in section 222 of the Government of India Act 1935, but were not included in the first Constitution of Pakistan known as Constitution of 1956. It is also

noteworthy that Quaid-i-Azam Muhammad Ali Jinnah also did not approve the idea of appointment of additional judges (Rizvi, 2005). The practice of appointment of additional judges in High Courts got started in 1958 through President's Order namely The Courts (Additional Judges) Order 1958, after abrogation of the Constitution of 1956 and declaration of Marshal Law under General Ayub Khan. Article 2 of the President's Order provided that "if by reason of any temporary increase in the business of the Supreme Court or of a High Court or by reason of arrears of work in any such court it appears to the President that the number of the judges of the court should be for the time being, increased the President may appoint person duly qualified for appointment as judges to be additional judges of the court for such period not exceeding two years as he may specify"

Article 96 was incorporated in 1962 Constitution for appointment of additional judges even against permanent vacancies. This provision was included in 1972 interim Constitution and has been also retained by the Constitution of 1973.

It will not be out of context to mention that there was no provision for the appointment of acting or additional judges in the Indian Constitution when it came into force in 1950. It was in 1956 that original Article 224 of the Indian Constitution was substituted by the new Article 224, through Constitution (Seventh Amendment) Act 1956 which provides for the appointment of additional judges in the High Courts.

It may be noticed that under section 222(3) of the Government of India Act 1935 and under Article 2 of the above President's Order of 1958 as well as under Article 224(1) of the Indian Constitution, an additional judge could be appointed in the following two contingencies:-

- Temporary increase in the business of a High Court; and
- Temporary increase in the arrears of work.

Whereas under Article 197 of the Constitution of Pakistan 1973 an additional judge can be appointed against a permanent vacancy or when a High Court judge is absent or is unable to perform the functions of his office due to any other cause or for any reason it is necessary to increase the number of judges of a High Court. In other words, under Article 224 of the Indian

Constitution, the appointment of an additional judge is purely temporary to achieve the above two objectives, whereas under Article 197 of Pakistan constitution appointment of an additional judge can be made against permanent vacancy.

The unfortunate practice that grew and followed by all the governments since 1962 is that Article 197 is treated as the gateway through which every judge of a High Court has to pass before being made permanent. Almost all judges of the High Court before they were made permanent had to get a number of extensions for short terms. The additional judges continued entering the superior judiciary with a legitimate expectation that they would not have to go back on the expiration of their term but they would be confirmed ultimately. What happened in practice is that the true purpose of Article 197 has never been carried into effect.

**Impact of Temporary Judges on Independence of Judiciary:** The practice of appointment of temporary judges (acting/ad hoc judges in Supreme Court and additional judges in High Court) carries some inherent and natural draw backs with itself which are

destructive to the image and independence of the judiciary.

Firstly a temporary judge particular an additional judge of a High Court would not be in a position to perform his duties as independently as a permanent judge, on account of the fact that a temporary judge is subject to fresh test of fitness and suitability. The conduct of an additional judge would remain subject to the scrutiny by the high dignitaries in connection with his re-appointment. It is very clear that he would not be in position to deal with the matters placed before him without fear of incurring the displeasure of any one of them. This fact has been very vividly acknowledged by a former judge of High Court in these words: "I did not feel weak even as an additional judge, but realized that some other additional judges were reluctant to decide cases against the executive before their confirmations. This is a very unhappy position. Some additional judges would even go out of their way to please the executive" (Samdani, 2004).

Secondly, very often the orders passed by a temporary judge particularly additional judge, against the Federal and Provincial governments which are the biggest litigants, in every High Court as

well as in the Supreme Court, are sure to displease one government or the other, in one way or the other. The judge too, after all, is a human being and member of a society where perfect moral standard is an alien concept. He is well aware of the price of the executive's displeasure, that is, his non-confirmation. The judicial history of Pakistan does not lack such examples. In 1990, the Provincial Assembly of NWFP was dissolved by the Governor as per the direction of the President of Pakistan. The dissolution order was challenged in the Peshawar High Court. The High Court, by a majority judgment four to one, set aside the dissolution order and restored the Assembly as well as the cabinet (See *Aftab Ahmad Khan V. the Governor of NWFP*, PLD 1990 Peshawar 192.). There were two additional judges on the Bench. One supported the majority view and other was the only dissenting judge. Although this judgment was never given effect and was soon suspended by a single judge of the Supreme Court but the President, Ghulam Ishaq Khan, was clearly offended by this judgment and the judges on the Bench had to face dire consequences for giving such judgment.

Justice Qazi Muhammad Jamil, an additional judge on the Bench who supported the majority view, was not made permanent judge. The only dissenting judge, Justice Ibne Ali, who was also an additional judge, was rewarded and made a permanent judge. The other three permanent judges on the bench were not elevated to the Supreme Court and instead a judge junior to them and who had not even completed the constitutionally required experience of five years as a judge of a High Court was elevated to the Supreme Court (Khan, 2005).

Thirdly there is no denying the fact that security of tenure ensures judicial independence and the tenures for short terms of appointment on ad hoc basis brings in insecurity directly impinging on judicial independence. The judges appointed for short terms on temporary basis are more vulnerable and more unsecured in a country like Pakistan having a political culture where governments are frequently changed and where political tolerance is non-existent. A very unhealthy trend has been developed that judges of the superior judiciary appointed on temporary basis by one government are not confirmed by

the government of another political party. This unhappy trend was first introduced by General Zia who did not confirm the judges appointed by the government of Zulfiqar Ali Bhutto's government (See High Court Judges (Scrutiny of Appointment) Order 1977, PLD 1977). After dismissal of Benazir Bhutto's government in 1990, the President of Pakistan, Ghulam Ishaq Khan revoked the appointment order of Justice Abdul Hafeez Memon as an acting judge of the Supreme Court (Shah, 2001). He was appointed by Benazir Bhutto's government. Again Benazir Bhutto, during her second tenure, did not confirm those judges of High Courts who were appointed by the government of Nawaz Sharif (Shah, 2001).

The fourth draw back of the existing system of appointing additional judges in High Courts under Article 197 is that there is no provision whatsoever for giving an additional judge an opportunity of defense or of being heard in case any complaint against his integrity as an additional judge is received (Haq, 1997). Dropping an additional judge at the end of his initial term of office without any concrete

reason and sound ground is not only destructive of the independence of judiciary but is also inconsistent with the principles of natural justice. If an advocate at the age of above 45 years (the minimum required age for high court judge) is appointed as an additional judge of High Court for one year or two years, what would he do if at the end of his tenure he is not confirmed as a permanent judge? Having burnt his boats of the Bar after his appointment as an additional judge, should he make fresh efforts to re-establish himself at the Bar? Will he not be in a worse position at the Bar if he is sent back with a label that he was not found fit to continue as a judge? Again if the affected additional judge is not at fault but he is dropped merely for political considerations of the government, then how can he be compensated for the wrong done to him or justice be done with him or his injury of the great injustice be cured?

The last rather may be the worst draw back of the system of appointing acting, ad hoc and additional judges to the superior courts is that such temporary judges on a bench do not inspire confidence in the litigants particularly in cases where government is a party.

There are many examples of the objection raised against the formation of a bench on the ground of having non-permanent judges. In Sindh High Court an application for transfer of a case from an additional judge was submitted to the Chief Justice of the said High Court on the ground that the additional judge was like a probationer, therefore, was not expected to do justice. It was further argued that such judge would not feel confident to hear case against the government; therefore in the interest of the justice the case should be transferred. The Sindh High Court did not agree with the arguments and held that additional judge is equivalent to permanent judge and he is not a probationer (See Shaikh Abdul Aziz Hamed Al-Gosaibi V. Pakistan International Airlines Corporation, PLD 1995). As per the ruling of the Sindh High Court in this case, an additional judge is not like a probationer but another Chief Justice of the same High Court had another opinion in this regard. In 1990, after the dismissal of Benazir Bhutto's government, the then Chief Justice of Sindh High Court was informed by the then law Secretary that the President had approved the names of two judges of

Sindh High Court to be members of Disqualification Tribunal. The Chief Justice told the law secretary that "nominated judges were not permanent judges and were still on probation" he further requested him that "permanent judges should be appointed because they would inspire confidence in the aggrieved parties against whom references were to be heard" (Shah, 2001). In 1994 a constitutional case (Pir Sabir Shah V. Federation of Pakistan, PLD 1995) was decided by the Supreme Court. The judgment was announced by majority of seven to five. Justice Ajmal Mian who held the minority view notes about the judgment that the majority view was supported by four acting or ad hoc judges, whereas the senior permanent judges supported the minority opinion (Mian, 2004). It must be mentioned that the case was decided in favor of the federal government. A known columnist Ardshir Cowasjee highlighted in his Article that senior judges were out-numbered by the induction of acting or ad hoc judges.

#### **CONCLUSION:**

The foregoing study conclusively indicates that the appointment of such temporary judges, particularly

Additional judges in High Court adversely affects the independence of the judiciary. The irony is that the issue under discussion could not get proper attention either of the parliament or of the court. Very recently the whole constitution has been overhauled through 18<sup>th</sup> constitutional amendment. (The 18<sup>th</sup> amendment has been added to the constitution in April 2010.) This highly valued and bulky constitutional amendment, too, missed to address the issue. The parliamentary committee that prepared the 18<sup>th</sup> amendment could not realize the damaging effect of the constitutional provisions relating to the appointment of Acting/Ad hoc judges in the Supreme Court and Additional judges in the High Court.

The court also failed to provide proper guidance to the parliament through rulings/judgments. The much reputed judgment in this regard is that of the Supreme Court's judgment in *Al-Jehad Trust Vs. Federation of Pakistan* (commonly known as judges' case). In this case the Supreme Court interpreted various Articles of the constitution related to the judiciary, particularly, appointment of the judges. The court in respect of Articles 181 and 182 ruled,

'appointment of ad hoc judges against permanent vacancies of the Supreme Court violates the constitution' (PLD 1996). Regarding the appointment of additional judges in High Courts under Article 197 the Supreme Court declared, 'An additional judge of a High Court acquires a reasonable expectancy to be considered for appointment as permanent judge, and if he is recommended by the Chief Justice of Pakistan, he is to be appointed as such in the absence of strong reasons to the contrary to be recorded by the President/Executive which would any way be justiciable.'

The ruling of the Supreme Court in respect of Articles 181 & 182 is sufficient to some extent in stopping the misuse of the said constitutional provision. But unfortunately the ruling of the Supreme Court in respect of Article 197 failed to address the real issue attached with this Article i.e. almost all judges of High Courts are initially appointed as additional judges for a fixed term. They have to get number of extensions before they are made permanent. The worst factor in this whole process is that independent additional judges are not made

permanent as independent judges are always disliked by the executive in Pakistan. The judicial history of Pakistan is full of such examples. The Article 197 in the present form is widely misused and misapplied. It calls for amendment.

The Constitutional provisions relating to the appointment of temporary judges, particularly Article 197 under which additional judges are appointed in High Courts needs amendment to 'fully secure' independence of the judiciary as envisaged by the Objectives Resolution 1949. Article 197 may be amended and appointment of additional judges may be allowed only in two cases:

- Temporary increase in the business of a High Court; and
- Temporary increase in the arrears of work.

It must be specifically provided that additional judges shall not be appointed if permanent vacancy is available. It is also suggested that the above cited ruling of the Supreme Court in respect of Article 181 & 182 may be incorporated in the constitution through amendment as Pakistan's power hungry executive can be stopped from trespassing the independence of judiciary only through clear, unambiguous and vivid constitutional provisions.

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## ADMINISTRATIVE DISCRETION: A TOOL OF CREATIVITY

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### ABSTRACT

The exercise of discretionary authority by administrative agencies is probably subject to more criticism than any other task of governmental administration. In the implementation process especially, where administrators have become policy-makers in their own right, often enjoying virtual autonomy as they exercise discretionary authority accorded to them by legislative institutions. Does this mean that the administrative officers should be deprived of discretionary powers? Or the administrative machinery should be left free. Through this article it has been tried to explain, what does this term mean, what is the importance and need of discretion in the present day administration, and lastly how it could be made a tool of creativity.

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### INTRODUCTION

Since the governmental policies are expressed in form of laws, regulations or official pronouncements, which are no less than words, the words whose intent and meaning may or may not be clear unless and until they are administered. It is the act of administrator that makes the policies apparent to the citizens. Administrative structure is, therefore, considered to be of more eminence in today's political systems than ever before. According to Dorsey (Wahlke Ed, 1971) "the technological and industrial revolutions, rising and spreading nationalism, the social mobilization of increasing milieus and heightened international tensions have necessitated striking administrative change and growth. With such growth

and change the realization has spread that administrative sophistication, the ability to construct and manage complex administrative systems, is a vital factor in national development and human welfare".

It is true that in no administrative system, administration is carried out wholly by rules alone, without any recourse to the will of the administrator and his personal sense of what should be done to achieve a just result in the cause before him. But the will of the administrator should, also, not be exercised habitually or entirely as such, wholly free from the constraints of acknowledged rules of action or principles of decision.

It is, therefore, imperative for the smooth and proper conduct of governmental

machinery, that the administrative organ be given adequate recognition. The discharge of administrative function, mostly, consists in the impartial and efficient execution of the policies and the laws as lay down by the legislature. Goodnow (1905) thinks that if we are to be guided by the facts of history we may conclude that its recognition will be accompanied by the grant of a reasonable degree of independence, not merely a legal but as well an extra-legal independence.

**DEFINITION:** Discretion: according to Webster's Encyclopedia is the power or right to decide or an act according to one's own judgment; it can be defined as freedom of judgment or choice. Similarly if we take it in this way i.e., "At discretion" then it is explained as 'at one's option or pleasure'. (Webster's Encyclopedia)

Discretion is the power or right to make official decisions using reason and judgment to choose from among acceptable alternatives. This power is not limited to substantive choices but, also, extends to procedures, methods, timing and many other additional factors (Encarta). Discretion is freedom to act or

judge on one's own  
(<http://www.wordreference.com/definition/discretion>)

A public officer has discretion whenever the effective limits on his power leave him free to make choice among possible courses of action or inaction (Davis, 1971). The important element of discretionary power is the proposition that discretion is not limited to what is authorized or what is legal but includes all that is, according to Davis (ibid) within the effective limits of the officer's power.

In Wikipedia, the free encyclopedia, the term 'discretion' has been given the following meanings: 1- the quality of being discreet; circumspection. 2- Ability or power to decide responsibly and 3- the Freedom to act or judge on one's own. As a noun it has been explained, in the same encyclopedia, as the quality of behaving so as to avoid social embarrassment or distress and secondly the freedom or authority to make judgments and to act as one sees fit or feel the act as desirable: this judgment or act may be called "at his discretion".

According to Merriam-Webster's online dictionary discretion is the quality of being discreet or circumspection. It is an

ability to make responsible decisions. It is individual's choice or judgment. It is explained as a power of free decision or latitude of choice within certain legal bounds.

Discretion: When applied to public bodies, means a power conferred upon them by law to act officially in certain circumstances, according to the dictates of their own judgment uncontrolled by the judgment of others, but in accordance with the law. As applied to public officer, it means power to act in an official capacity in a manner that appears to be just and proper under the circumstances. See also Judicial Discretion.

([www.canadianprisonlaw.com/glossary.htm](http://www.canadianprisonlaw.com/glossary.htm))

The exercise of professional expertise and judgment, as opposed to strict adherence to regulations or statutes, in making a decision or performing official acts or duties. A discretionary action is informal and, therefore, unprotected by the safeguards inherent in formal procedure. A public official, for example, has administrative discretion when he or she has the freedom to make a choice among potential courses of action (West's Encyclopedia of American Law 'enotes.com').

In another place Davis (ibid) explains discretion, says, an officer who decides what to do or not to do often finds facts, then applies law and before the facts are known and the law is applied, the officer decides what is desirable in the circumstances. The third of these three functions is customarily called "the exercise of discretion. A decision as to what is desirable may include not only weighing desirability but also guessing about unknown facts and making a judgment about doubtful law.

Administrative Discretion is defined as Authority of an individual appointed to a governmental position to use his or her discretion in the interpretation of the intent of the law when making a decision or implementing a policy (<http://www.peakagents.ca/glossary/a3.htm>).

Administrative discretion is, again defined as 'the performance of acts required to be done by an administrative agency may depend upon considerations not entirely susceptible of proof or disproof and which, considering the circumstances and the subject matter, which cannot be supplied by the legislature.

([www.canadianprisonlaw.com/glossary.htm](http://www.canadianprisonlaw.com/glossary.htm))

**IMPORTANCE OF ADMINISTRATIVE DISCRETION:**

Since administration and administrative law have to do with the governmental system in operation, or in other words, with the actual operations of political life. It is absolutely necessary that the study of these subjects take into account not merely the governmental system as it is outlined in charters of government and legal rules, but as well, those extra-legal conditions and practices, which it has shown, have such an important influence on the real character of governmental system. These operations group themselves under two groups. They consist either in operation, which is necessary to the expression of the political will or in operation, which is necessary in order that the will of the state may be executed. According to Goodnow (1905) the political will must be expressed before political action could be had. The political will must be executed after it has been expressed, if that will is to result in political action.

It is a human nature that he formulates and executes his will by himself, but the necessary procedure for him to adopt is that the will should be formulated before it is executed. Similarly, in the case of political beings it is necessary not only

that the political will of the sovereign be formulated or expressed before it can be executed, but also that the execution of that will be entrusted in large measure to a different organ from that which expresses it. The great complexity of political conditions, as Goodnow (*ibid*) observed, makes it practically impossible for the same governmental organ to be entrusted in equal degree with the discharge of both functions.

In spite of the fact that bureaucratic discretion threatens the idea of political accountability, some discretion is, of course, inevitable, as laws cannot possibly anticipate the different kind of situations and circumstances that administrative agencies confront. Bureaucratic discretion is viewed as appropriate and even essential in assuring that experts develop policies. The environmental and health safety regulations can best be formulated by scientific expertise and technical calculations. So when the government concerns itself with the stability of an industry, Landis (2004) says, the only intelligent realism for it is to follow the industrial rather than political analogue. It is, therefore, imperative for the smooth and proper conduct of governmental

machinery, that the administrative organ be given adequate recognition. The discharge of administrative function, mostly, consists in the impartial and efficient execution of the policies and the laws as laid down by the legislature. Goodnow (1905) thinks that if we are to be guided by the facts of history we may conclude that its recognition will be accompanied by the grant of a reasonable degree of independence, not merely a legal but as well an extra-legal independence.

Although public administrators perform, concurrently, the adjudicative and purely administrative functions but their most important job is, probably, making rules to govern society. That's why, Warren (1982) says, I call the agencies as "legislative Bodies". He further says, "When making rules, public administrators, in fact interpret general Congressional statutes and assign them their real meaning by giving them life in society. It, therefore, needs to be noted that in the modern era the real character of a governmental system is determined not only by the law in accordance of which it is supposed to act but also by extra-legal conditions and practices.

Not only is bureaucratic discretion an inevitable, inescapable characteristic of government but also it has often been championed as a positive and desirable precondition for effective governance. For John Locke, executive discretion was necessary, given the nature of legislative process: the power to act according to discretion, for the public good, without the prescription of the law and sometimes even against it, is that which is called 'prerogative' (quoted by Bryner, 1987).

#### **DISCRETION AND THE RULE OF LAW**

Professor Buxi (Massey, 1995) has very briefly summarized the need for the imposition of restraints on discretionary powers in such words, "in each society, there exist conflict between power and justice. Where there is power there exit the probabilities of excesses of power. One way is to do nothing about this and let the big fish eating little fish and the other way is to try and combat this practice. Administrative law identifies the excesses of power and endeavor to combat them.

In modern societies, considerable authority is given to legislators, judges and administrators. Each faction can act quite arbitrarily in any or all of the ways which may not be specified anywhere in

the area of their jurisdiction. Professor Buxi (Massey, 1995) in this regard maintains that the trouble and tension arise from the fact that those who have the power to rule, do not generally or always like to account for their actions. They believe that the very fact that they are the rulers should be in itself a sufficient assurance that they will exercise their powers justly. One reason for this belief is the fact that each group in the rule of law society has conceded some claims of general accountability.

In many cases where the aggrieved party had no way of knowing what to do or not to do in order to maintain its claim and was forced to rely on whatever *ad hoc* decision the administrators are likely to make. Against such a scenario, the advantages of the rule-of-law system are evident.

West (2001) explains, first, the rule of law facilitates government by the consent of the governed. Since rules are made in advance and apply to a broad array of cases that may arise in the future, the people have the opportunity to consent by way of the deliberation and votes of their elected representatives. In a situation where *ad hoc* decision-making is used, a decision

is made only once a particular case arises, thus providing no opportunity for the citizens to grant their consent.

Second, as the rule of law makes it much more difficult "for government to play favorites, to benefit its personal friends and harm its personal enemies." It is thus the best means of maintaining a government dedicated to the equal protection of its citizens' rights, which is the aim of all legitimate government, according to the American Declaration of Independence.

As compared to the non-rule of law societies, the rule of law societies do have, in theory, much greater scope of accountability. But there is a difference between general accountability and more specific forms of accountability. This is why even in rule of law society there remains a scope for grave and continuing excesses of power. Therefore the need arose to evolve specific and concrete mechanisms of accountability in addition to the diffused and general ones like election, impeachment, public opinion etc. It is this search for a new and effective mechanism to make holders of public power adhere to the law and justify the exercise of power in terms of law, policy and constitutional values,

which distinguishes a rule of law society from the non-rule of-law society.

The basic expectation in rule of law society is that possessor of public power and authority must be able to publicly justify their actions as legally valid, socially wise and just. Professor Buxi (Massey, 1995) is anxious about the misuse of administrative powers and, therefore, forwards the desire in these words, “the powers should only be used for the purpose for which they are conferred and not for other purposes. If the powers are used outside the ambit of statutory purposes then we have a situation not just of ultra vires but also one of arbitrariness, where the will of the power wielder becomes the sole justification for the exercise of power”. The situation where the element of will dominates the administrative decisions may be termed as tyranny. The need for administrative law was, in fact, felt to introduce and implement the doctrine of “rule of law” as a sovereign power over the whole administrative machinery, said Wahlke (1971). Wade (1982) goes a step further and writes that the concept of rule of law may be called as the main spring of administrative law.

Where so much power in the modern state has been given to the administration, a neutral umpire between the conflicting interests of the administration and the citizens is essential. Yardley (1981) thinks that administrative law could play the role of an unbiased arbitrator and therefore the law should be employed, not just to disqualify unlawful exercise of power but also to compel the performance of legal duties, which have been neglected. Therefore, strict adherence to the legal and constitutional provisions can make administrative discretion as a tool of creativity.

### DISCUSSION

*“Unlimited power is apt to corrupt the minds of those who possess it; and this I know, my lords, that where laws end, tyranny begins”*. William Pitt Jr.

“Where Laws end Tyranny Begins” these words of William Pitt are engraved in a stone affixed on the building of U.S Justice Department, Washington D.C. Davis (1971) looking on the quotation poses a question that what should be done to assure that where law ends tyranny will not begin. He answers to his own question, saying that to fix as the goal the elimination of all discretion on

all subjects would be utter insanity (ibid: 43). We should eliminate much unnecessary discretionary power and that we should do much more than we have been doing to confine, to structure and to check unnecessary discretionary power (ibid: 4).

All governments in history have been the governments of law and of man. Rules alone without having discretion cannot cope with the complexities of modern government. Discretion is a principle source of creativeness in government and law. It would not be wrong if we call it a double edge sword. According to Davis (1971) "Discretion is a tool only when used properly; like an axe, it can be a weapon for mayhem or murder". In a government of man and of law, the portion that is a government of man, like malignant cancer, often tends to stifle the portion that is a government of laws. He says that perhaps nine-tenth of injustices in our legal system flows from discretion and perhaps one-tenth from rules.

The exercise of discretionary authority by administrative agencies is probably subject to more criticism than any other task of governmental administration. In the implementation process especially,

where administrators have become policy-makers in their own right, often enjoying virtual autonomy as they exercise discretionary authority accorded to them by legislative institutions (Shumavon and Hibbaln, 1986). This does not mean that the administrative branch should be deprived of discretion; Redford (1958) observes that it is not viable to disallow discretion to administrators since discretion is very important to their performance. The two views are like-minded. While it is impossible for the bureaucracy to function without the exercise of discretionary power, the greater the discretionary power of the bureaucrat the more decisive it becomes to prevent the bureaucracy from being dominated by "personalized entrepreneurial attitudes". The essential objection to the activity of administrative agencies is directed against the extremely great amount of discretion with which they are entrusted, said Prettyman (1958). Now, the greatest of all problems is the control of administrative discretion. Sometimes sizeable discretionary powers have to be granted to executive bodies, nevertheless, the test is the same, namely, is it an additional function? And

the more clearly an official understands what he is doing, that he is not there to impose his will but to judge among visible claimants and invisible interests, the more likely he is to set himself a sound and workable criterion of the public interest.

When controversies arise that administrators are not qualified to settle, or when they in the course of their work either prescribe arbitrarily the fate of citizens or invade their legal rights, the public should be able to hold the administrative officers accountable for it. Administrative law has, therefore, presented in the principles, that the grant of discretionary power is necessary for the administrators; at the same time the administrators should also be compelled to make sure the strict adherence to the statutory rules. So we should not oppose discretionary power but should oppose unnecessary power. We should not, as Davis (1971) puts it, oppose discretionary power commensurate with the tasks undertaken by government; let us oppose discretionary power that outruns those tasks. He adds; let us not oppose discretionary power that is properly confined, structured and checked; let us oppose that power which

is improperly unconfined, unstructured and unchecked.

The arbitrary exercise of discretion and abuse of power by public servants has become a routine practice. The reason behind these arbitrary actions is the absence of effective and efficient control mechanism. Lord Acton has long ago pointed it out by saying that “power tends to corrupt and absolute power corrupts absolutely”, Wade has quoted (1982). Many countries have devised a proper system of checks and balances to restrain the abuse of power and to ensure that the power is used only for the purpose for which it is given.

In Pakistan the element of discretion is playing a very dominant role in all administrative functions. Being “a necessary governmental tool” the power of the executive officers to legislate or adjudicate cannot be denied, what the literature reveals on this topic and what it suggest, is that a balance should be maintained, nor the delegated power should be unfettered nor inadequate. Davis (ibid) is also of the opinion that the sensible goal should not be to try to replace discretion with rules but to locate the proper balance between rules and discretion.

## **CONCLUSION**

In the light of the above discussion the point comes clear that the public administration of modern welfare state needs to be decorated with discretionary powers so as to be able to execute the policies formulated by the legislature, not only according to its letters but also to its spirit. So this will in no circumstances be advisable to completely deprive the administrators of the discretionary powers nor should they be left free to do as they wish or think fit. Administrative discretion can be a tool of creativity provided it is exercised within the prescribed limits of law and the dictates of constitutional provisions regarding fundamental rights.

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# STRUCTURE OF SME AND ITS IMPACTS ON THE DEVELOPMENT OF N.W.F.P

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## **ABSTRACT:**

Sustainable economic development plays a pivotal role in bringing about prosperity and reducing poverty in the region. Small and Medium Enterprises are often found at the heart of local and regional economies. Enterprises create jobs, wealth and considered good for encouraging further investment in the local communities. Greater reliance must be given to the role that small and medium enterprises can play in generating wealth and eradicating poverty. Communities are responsible themselves for identifying the need for SMEs growth and development. In this context, the researcher is going to highlight the need and culture of SMEs in the province. Further, this research material will practically inspire the entrepreneurs to continue their efforts for economic development of the region under the umbrella of SMEs.

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## **INTRODUCTION**

Pakistan being a developing country needs attention in most of the potential areas, where efforts have been made from the last few decades. SMEs are the backbone of Pakistan's economy. It represents 90 per cent of all enterprises in the country, providing millions of jobs and is an essential source for entrepreneurial spirit and innovation. SMEs profile in the NWFP is neither accessible nor readable for the investor, because a number of problems are attached inherently to this region. Due to of these problems, the local investors and foreign investor's hesitated to come

here for investment purpose. Secondly, disparity on the part of the Government, has also neglected this region. The region however has a fertile approach for SMEs establishments. NWFP possesses a potential structure for promoting SMEs sector, so as to bring at par with other provinces of the country.

SMEs are labor-intensive industries instrumental in creating employment in economy with abundant unskilled labor, though such enterprises may not always be supported on the grounds of economic efficiency. In addition, a low capital requirement, giving an appropriate market environment, is a stimulus of growth of numerous

indigenous enterprises with wide regional dispersal. This helps promote a balanced growth, more equitable income distribution, as well as diversification of the industrial structure, which often leads to increased utilization of national resources. This process can help to develop the entrepreneurial and managerial class and boost capital formation in the community. Such establishment creates the basis for transformation of an economy from using traditional and outdated techniques to the use of modern and efficient technology (Gupta & Cawthon, 1999).

Recently, a major resurgence of small and medium businesses throughout the developed world has got the pace of development in every economy. Even in developing economies like Eastern Europe, Malaysia, and Turkey such skills are now greatly prized. In the underdeveloped economies significant growth potential is being observed since 1990. In the developed economies 6% to 15% of the working populations are engaged in small businesses. Only in U.K over half of the population is in commercial and industrial employment directly related to small businesses. In Italy 90% small businesses absorb 84%

of the total employment. In Denmark 92% of all manufacturing firms are in the shape of small businesses, employing 43% of the workforce (Barrow Colin, 1997).

Small businesses have been flourished in almost all ancient cultures (Irving, 1979). The Arabs, Babylonians, Egyptians, Jews, Greeks, Phoenicians and Romans had a substantial population working in this area in the name of small businesses. Their products and services however, were often of poor quality. Consumers often were cheated and defrauded. As a result small and medium businesses become the subject of contemplation, that's why even 4000 years ago it was considered necessary to protect the consumer from business and business from consumers (Edward, 1963).

In a country like Pakistan, unemployment has been problem for quite sometimes. SMEs are one of the most important ways of combating this problem at a very affordable cost. At present, the Government is putting emphasize on self-employment and rural industrialization. Government agencies are launching a campaign towards this end. But Social Scientists are giving

word of caution with a view that SMEs are not a magic to bring miracle just by helping the people to start them. It needs a meticulous preparation and planning before establishing industry followed by a lot of hard work to run it successfully with reasonable growth.

To produce quality goods and to market the same for better return in the competitive environment, it is essential to know how to do it. To be competitive, SMEs must have inputs of material science, manufacturing technology, management, and marketing at minimal cost, if not always free. This is what distinguishes it from a large-scale industries (LIs), where all these have to be paid for (Malik & Gogi, 2002).

### **PROBLEM STATEMENT**

SME's is a challenge for today's management group in the context of industrial development and economic growth of the country .The leading characteristics of sustainable SMEs growth and development in the economy are contributing in the form of sound & conducive growth opportunities and productive employment, for competing in the global export markets or open new domestic markets for international

competitors. A successful participation of any firm (SMEs) in local as well as in global markets depends heavily on the capacity to innovate through efficient economic networks (which includes technological, financial, economics, commercial and managerial and organizational viability) (Hal & Abrahamson, 1984). Thus SMEs can be considered as the basic constituents and building blocks towards fortifying the edifice of the economy.

For many years now expectations concerning small and medium scale industries (SMEs) have been growing rapidly across the world both in developing and developed countries. After a distinct period of a considerable fascination of SMEs, the world economic literature together with economic and political leaders around the world have been pointing in recent years at the importance of SMI Sector for both advanced market economies as well as economies in transition.

One of the main reasons for such reorientation has been the new way of thinking by managers and economists in developed market economies and a new perception of opportunities of economic success in the name of *the standardized*

mass production. Which have lost its weight on account of quality orientation in management and ability to tailor production to individual and changing the needs of ever-stronger customer (Nishat, 2000).

Another main reason is to provide a feedback to the country Large Scale Industries. Which are easily available through SMEs, proved to be more flexible in responding to the customers needs, capable of an authentic customer focus, faster in adapting to and learning from changing world market situations, more risk prone in introducing new technologies and new creative methods of management in the name of LIs.

**STRUCTURE OF SME SECTOR**

SME contribute over 90% of business (by number) in Pakistan <sup>1</sup>, all of which function within the private sector. Many of the SMEs operate in the informal sector, which is undocumented. They represent a significant part of Pakistan’s economy in terms of both value addition and employment to lower income groups, they are also considered an important vehicle for poverty reduction.

SMEs, in particular, play a key role in the manufacturing sector; providing 80% of the total employment, contributing over 30% to GDP, and generating one-fourth of the sector’s export earnings<sup>2</sup>. The given table shows the importance of SMEs as major provider of employment and their increasing contribution towards manufacturing value added. The following table containing information about SMEs contribution in manufacturing sector;

<sup>1</sup>. *Pakistan assistance strategy, World Bank report, annex II, p.*

<sup>2</sup>. *www.dailytimes.com Dec. 2004.*

Table-1 Contribution of SMEs in Manufacturing Sector

Category	Year	
	1980-81	1997-98
Value Added	27%	35%
Employment	85%	83%

Source: *Economic Survey of Pakistan 2002-2003.*

SMEs contribute significantly to exports within the manufacturing sector, as evident from Table-2. For the past three decades, the fastest-growing export industries have been dominated by SMEs. Out of the largest five SME sub-sectors, cotton weaving and other textiles rank between the top two exporting sectors. Other exporting sub-sectors such as sports goods and surgical

equipments are less significant in terms of their share within the SME sector.

Table2 SME Sector Contribution to Manufacturing Exports

Sub Sector	Contribution (%)
Cotton Weaving	21.0
Other Textile	24.0
Sports Goods	6.3
Leather Goods	3.4
Carpets	3.3
Surgical Goods	2.0
Footwear	0.7

Source: Directory of Industrial Establishment, Government of NWFP, 2003-04.

SME exports, however, have largely tended to dominant low value added sectors that rely on traditional technologies. Unlike other countries, such as Taiwan, China. They have not been the driving forces for the growth of high value-added and skill intensive exports. But they have developed home artisanship for increasing surplus products, which bring more in terms of remittances to the country (Alvarez, 2004). Pakistan has been able to achieve an average 5% growth rate over the past

four decades. However, since the early 1990s there are indications that the economy has slowed down considerably. Not only has the average GDP growth declined during 1990s but the variance in growth has also been significant (see the following table). Focusing on the manufacturing sector, the performance of large-scale manufacturing (LSM) has been relatively better than the performance of small scale manufacturing sector in Pakistan. LSM grew at an average of 4.7% during the first half of the 1990s, and then declined to an average of 2.5% during the second half. In comparison, the SME sector grew at 8.4% in 1990s, declining to 5.3% during the last three years. More recently, while the LSM sector has had negative growth rate of 0.7% (FY00), the growth rate of SME sector has remained more or less stagnant<sup>3</sup>.

Table-3 Growth Rate of Small Industries

Years	1991-92	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98	1998-99	1999- 00
Overall	7.71	2.27	4.51	5.26	6.77	1.93	4.30	3.15	4.46
Agriculture	9.50	-5.29	5.23	6.57	11.72	.12	3.82	1.95	5.54
Manufacturing	8.05	5.35	5.39	3.69	4.80	1.29	7.88	4.18	1.57
Large Scale	7.91	4.14	4.14	1.68	3.14	-2.14	7.60	3.72	0.04
Small Scale	8.40	8.40	8.40	8.40	8.40	8.40	5.3*	5.3	5.3
Commodity	8.61	0.09	4.84	5.69	8.45	0.37	5.34	2.23	4.45
Services	6.76	4.63	4.18	4.82	4.99	3.61	3.2	4.12	4.48

Note: \* the growth rate of small-scale manufacturing was adjusted downward on the basis of a new survey conducted by the federal Bureau of Statistics (FBS) in 1996-97.

<sup>3</sup>Source: Economic Survey, 1999-2000.

The following table shows the existing status of industries, employment and investment in NWFP.

On the basis of survey conducted during 2001-2002, 741 units are reportedly closed. This figure has far exceeded and conservatively 50% of the established units are closed for one reason or the other,

making an investment of Rs. 13055.694 million redundant and loss of 18618 jobs.

For detailed view of employment opportunities created in each sector are as under:

Industrial Units Investment and Employment, Sector-Wise Break Up

Table-4: Existing Status of Industries, Employment & Investment in N.W.F.P.

S. No	Industrial sector	Units		Employment		Investment	
		Nos.	%age	Nos.	% age	Rs. (Million)	% age
1	Food, Beverage, Flour Mills, Tobacco	567	31	15413	27	7256	12
2	Textile, Apparel & Leather	265	14	16280	28	19551	32
3	Wood & its Products	85	5	1395	2	667	1
4	Paper & Its Products	54	3	1561	3	1190	2
5	Chemical, Rubber, and Plastic	335	18	8649	15	8054	13
6	Mineral Products	312	17	6687	12	17698	29
7	Metal & Its Products	207	11	7085	12	6026	10
8	Other Industries	23	1	220	1	363	1
	<b>Total</b>	<b>1848</b>	<b>100</b>	<b>57290</b>	<b>100</b>	<b>60805</b>	<b>100</b>

Source: Directory of Industrial Establishment, Government of NWFP, 2002.

#### Sector I

Food Beverages and Tobacco	Investment in Million Rs.	Employment
Vegetable Ghee/Cooking Oil	190.38	427
Sugar/Distillery	276.2	525
Flour Mills	492.325	599
Closed	--	1082.967
Biscuit/Sweet	124.056	276
Vermicelli's	0.42	5
Meat Processing	3.8	28
Poultry Farms	5.4	22
Milk and Milk Products	9.97	22
Beverages/Mineral Water	301.077	563
Cold Storage	23.646	82
Ice Factories	15.345	112
Canning Preservation of Food and Vegetable	8.944	7
Spice Grinding	17.984	16
<b>Total</b>	<b>1469.547</b>	<b>3766.967</b>

#### Sector II

Textile, Weaving	Investment in Million Rs.	Employment
Polyester Staple Fiber	8.378	26
Woolen Mills	48.997	245
Cotton Mills	10.7	40
Carpet	50.696	279
Hosiery	6	24
Garments	16.173	23
Leather	25.571	113
<b>Total</b>	<b>166.515</b>	<b>750</b>

#### Sector III

Wood and Wood Products	Investment in Million Rs.	Employment
Wood and Wood Products	62.126	209
Furniture	61.098	358
<b>Total</b>	<b>123.224</b>	<b>567</b>

#### Sector IV

Paper and Paper Board	Investment in Million Rs.	Employment
Paper and Packages	100.037	316
Printing Presses	36.378	499
<b>Total</b>	<b>136.415</b>	<b>815</b>

Sector V		
Chemical, Pet, Rubber etc	Investment in Million Rs.	Employment
Chemical	121.784	167
Pharmacy	256.676	1611
Match Industry	293.743	2028
Soap Industry	23	73
Lubricants/petroleum Industry	97.845	20
Paints	0.884	20
Rubber and Plastic Goods	402.001	680
Adhesive Tapes	57.546	102
Fiber Glass	9.183	77
Formica	41.123	70
Total	1303.785	4848
Sector VI		
Mineral Products	Investment in Million Rs.	Employment
China, Clay and Ceramics	242.281	260
Glass	68.497	300
Cement Based Industries	10.943	85
Marble Industries	117.768	650
Total	439.489	1295

Sector VII		
Other Manufacturing Industries	Investment in Million Rs.	Employment
Electronic Goods and Appliances	75.516	151
Metal Products	45.623	135
Aluminum	21.014	61
Arms and Ammunition	22.988	57
Gases	2.50	9
Auto Rickshaw and Scooters	38.692	144
Engineering	158.301	488
Total	390.634	1045
Grand Total	781.268	2090

Source; Directory of Industrial Establishment, NWFP. 2002.

**Table-5: Loan Distribution to Provinces by Major Banks/DFI's (Million Rs.)**

SNo	Banks/DFI	Punjab	Sindh	N.W.F.P	Baluchitan	A.J.K	Total	N.W.F.P. Share
1.	IDBP	2401	967	487	430	-----	4286	11.36%
2.	Bankers Equity Ltd.	4967	7547	268	475	226	13483	1.99%
3.	P.I.C.I.C.	9144	3755	1413	505	380	15197	9.29%
4.	N.D.F.C	19027	12040	453	610	289	32419	1.39%
5.	<b>Total</b>	<b>35539</b>	<b>24309</b>	<b>2621</b>	<b>2021</b>	<b>895</b>	<b>65384</b>	<b>4.01%</b>
6.	<b>Distrib-ution</b>	<b>55%</b>	<b>37%</b>	<b>4%</b>	<b>3%</b>	<b>1%</b>	<b>100%</b>	<b>-----</b>

Period:- 1988 to 1991 for IDBP. BEL, PICIC 1985 to 1988 for DFC

Source: Annual report of Banks/DFIs (2002).

Table-5 shows that on the average the total disbursement for NWFP is 4.01% against its population of 13.81% while Punjab and Sindh have obtained higher ratio, compared to their population. In order to bring this at par with percentage population of Punjab and Sindh, massive investment is considered necessary in the industrial and other economic sector of NWFP. (Annual report of Banks/DFIs 2002).

## IMPACTS ON DEVELOPMENT OF THE REGION

With this perspective, industrialization in Pakistan, the development of the SMEs is now being considered as a more appropriate alternative to promote industrialization (Ahmad and Ahmad, 1988). In fact the SMEs are now playing an important role for Pakistan. Their significant contribution in production and employment coupled with significant

shares in exports, has made them a potential source of sustainable growth and development.

There was no single Industry in N.W.F.P., at the time of partition in 1947, only few industries were present in Pakistan. So the Government of Pakistan faced a lot that how to industrialize this newly created under developed part of the country. In this regard, "Small Industries Corporation" was established for the whole West Pakistan to develop and promote the cottage and small industries, to create skilled labor. To reduce the rate of un-employment and to feed the new coming industrial units, this corporation had to cover a vast area, priority was given to such places where there was great potential for the new industry.

But after the disintegration of the One Unit in 1971, and after NWFP becoming a province, realizing the fact that small industries is a breeding ground for SME as well as for large industries, the Government of NWFP established the "Sarhad Small Industries Development Board" on July 1st 1972, with the same objectives and role as that of Small Industries Corporation previously for promotion and development of cottage and small industries in the province. It's

creation was later embodied in a Legislative Act of the Provincial Assembly, "The N.W.F.P. S.I.D.B Act No 11 of 1973".

The North-West Frontier Province (NWFP) ranks third among Pakistan's Provinces and territories in term of industrial development, albeit with a large gap. The industrial census shows that the province accounted for only 7.5% of fixed industrial assets and less than 7% of gross industrial output in the mid-1980s (Rizvi, 1994). While these shares may have increased modestly in the meantime in response to a number of schemes to promote the development of small and medium enterprises (SMEs) in particular, industrial development on a more ambitious scale has been constrained by a dearth of resources, remoteness from major markets, and lack of adequate infrastructure. The most important industrial branches in terms of output value are food and tobacco processing, textiles and garments, wood and furniture, non-metallic minerals especially the processing of the regional large and varied deposits of marble, and cement, etc (World Bank Report, 1998).

## FINDINGS AND SUGGESTION

The growth and health of the SME sector is, to a considerable extent, linked to the state of the LSM sector. Given the subcontracting linkage between the two sectors, it is difficult to conceive of a situation where the informal SME sector can continue to grow on a sustained and long-term basis in the presence of a stagnant or declining formal or LSM sector. It is the case with other provinces as the pace of industrialization in the NWFP has not been very encouraging. Except for few brief periods during which industrial activity slightly picked up, mainly due to presence of incentives, the province has been lagging behind other regions of the country in terms of industrial growth. The province, like most other areas of Pakistan, started with virtually no industry in 1947.

Main factors affecting the pace of industrialization in the province are long distances from the sea-port as well as major consumption centers, lack of infrastructure facilities and financial institutions, lack of entrepreneurial know-how, and scarcity of skilled manpower. Illegal import of consumer goods through Bara market, Ghulam Khan and Khusut Gate way to Marinshah North Waristan

Agency (NWA), Teri Mangal Gateway to Kurrum Agency from Afghanistan, Thurhum Landikotal Gateway to Peshawar, and Sahhakot Agency entrance, and Chinese products entrance through Northren Areas gateway, all these have been affecting industrialization in the province (Khan, 1969).

Another main reason that directly having impact on the development of the Province, is accommodating more than 3 millions Afghan migrants from their interal unsafe political environment in the country. The Pressure of Afghan crisis has paralyzed the trading and manufacturing sector of the Province. The people of this region finding no stability in their business units, because, of this over population is damaging the SMEs sector horizontally and vertically. Horizontally, it has increased the number of business participants in the same sector by their own skillful projection in every phase of life, where it not justify the SMEs production, and vertically, Afghan people have take the charge of all whole sale supply in the province, where there is no chance of entering in any new area of production, and in other words SMEs having no market for their products in the

present paralyzed Afghan whole sales markets.

Other important issues that directly relate to the structure of SMEs in the region are the lack of experienced and expert labor. On the other hand, the owner's of the industries are reluctant to hire the services of the outsiders because they demand high salary package, which the industrialist are not ready to pay. The problems, still hang in the status co form that create problem for the development of SMEs on sound ground for the future line of action. The solution of this overall system problems demand attention from the High-ups. This paper recommends that the Province needs the following on priority bases:

- The establishment of proper training center of SMEs culture.
- A proper system of rewards introduction for the expert labor force.
- To make strong the turnover of employee's time wise and monetary/rewards wise, to eliminate the future problems of skilled employees.

## CONCLUSION

SME contribute over 90% of business (by number) in Pakistan, all of which function

within the private sector. Many of the SMEs operate in the informal sector which is understood, SMEs, in particular, play a key role in the manufacturing sector; providing 80% of the total employment, contributing over 30% to GDP, and generating one-fourth of the sector's export earnings. The performance of large-scale manufacturing (LSM) has been relatively better than the small scale-manufacturing sector in Pakistan. More recently, while the LSM sector has had negative growth rate of 0.7% (FY00), the growth rate of SME sector has remained more or less stagnant.

NWFP possesses a potential structure for promoting SMEs sector, so as to bring it at par with other provinces of the country. The provinces rank third among Pakistan's Provinces and territories in term of industrial development, albeit with a large gap. The province, like most of other areas of Pakistan, started with virtually no industry in 1947.

Industrialization in the NWFP has not been every encouraging except for few brief periods. Main factors affecting the pace of industrialization in the province are large distances from the sea-port as well as major consumption centers, lack of infrastructure facilities and financial institutions, lack of entrepreneurial know-

how, scarcity of skilled manpower and illegal import of consumer goods through FATA. The province has been accommodating more than 3 millions afghan migrants which has paralyzed the trading and manufacturing sector of the province. Other experienced and expert labor and reluctance of industrialists to hire the services of the outsiders because they demand high salary package (Sohal, Netto & Noori, 2001). The province needs to establish proper training center of SMEs culture; a proper system of rewards for the expert labor force and encourage turnover of employees, time wise and monetary/rewards wise, to eliminate the future problems of skilled employees.

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## **PREDICTORS OF JOB-SATISFACTION:**

### **A SURVEY OF DISTRICT EXECUTIVES IN NWFP PAKISTAN**

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#### **ABSTRACT**

The management can control job-satisfaction of their workforce if they can successfully predict this attitude. Across the attitudinal research, satisfaction from pay, work, supervision, promotion, coworkers and environment are widely accepted as the major predictors of employees' satisfaction. These factors of job satisfaction are thus hypothesized and tested as universal predictors of employees' attitudes however they provide very domesticated results when applied in a particular situation or organizational setup. The researchers have used the same tools of prediction to measure the degrees of predictability emerging from these factors of job satisfaction among the District Executive Officers in NWFP, Pakistan.

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#### **INTRODUCTION**

The public sector in the developing countries plays a forefront role in the economic development therefore there are concerted effort to make public sector management respond to the changing needs of developing nations (Sokoya, 2000). Furthermore, very few studies have worked on the job satisfaction among government employees (Ellickson and Logsdon, 2001). However, thousands of the published research articles as well as dissertations suggest that job satisfaction/dissatisfaction results into performance, productivity, organizational commitment, retention

and turnover of the workforce (Bodla & Naeem, 2004).

Given the established worth of job-satisfaction as the predictor of organizational efficiency and effectiveness, managements around the world apply all possible methods to predict the job-satisfaction itself. Furthermore, job-satisfaction is widely accepted as the function of different factors including work itself, pay, supervision, promotion, coworkers and work environment. Thus, the same factors can be used to foretell the future behavior of the workers and officers with reference to their job-satisfaction attitudes (Luthans, 2005:211; Robbins, 2005:24).

Research shows that pay, work, supervision, promotion, work environment, and coworkers are the main predictors of job satisfaction (see for example, Ellickson & Logsdon, 2001; Griffin, 2002:456; DeVane & Sandy, 2003; Lise & Judge, 2004). Likewise, personal and organizational factors, job characteristics, market factors (Saiyadin, 1998; Sokoya, 2000; Rocca & Kostanski, 2001), challenging work, supportive working conditions and colleagues (Naval & Srivastava, 2002), and demographic attributes have also been used to forecast the job satisfaction (Shamil & Jalees, 2004; Tsigilis et al., 2006).

This paper is based on an empirical study conducted for writing PhD dissertation on "The job satisfaction of District Executive Officers in NWFP, Pakistan." the regression of the factors of job satisfaction (pay, work, supervision, promotion, environment and coworkers) on involvement and commitment (positive consequences) as well as on absenteeism and turnover (negative consequences) were computed. This study reports different aspects of the above mentioned topic. The data collected from the DEOs has been

analyzed from multiple dimensions as a requirement in PhD research program. A paper on the demographic impacts, have already been published while this paper covers the regression analysis of the topic. Thus, main objective of this study is to identify the predictors of job satisfaction along with their degree of impact on the criterion variables of positive and negative nature.

## **LITERATURE REVIEW**

Job satisfaction has received the most attention of all work related attitudes; organizational commitment has become increasingly recognized in the organizational behavior literature. Whereas job satisfaction is mainly concerned with employee's attitude toward the job and commitment in the level of the organization, a strong relationship between job satisfaction and organizational commitment has been found (Locke & Latham, 2000:249-250). Job satisfaction relates to an individual's perceptions and evaluations of his/her job, and this perception is in turn influenced by the circumstances, needs, values and expectations. It is an emotional response to a job situation, which is determined by how well outcomes meet or exceed expectations.

If employees are treated unfairly, work hard but received less reward, they will have a negative attitude toward their work, boss or coworkers - they are dissatisfied. On the other hand, if they feel they are being treated very well and are being paid equitably, they are more likely to have a positive attitude toward the job - they are satisfied (Luthans, 2005:212). Thus, "job satisfaction describes how content an individual is with his or her job (Wikipedia, 2009)."

Across the literature, most commonly used constructs as predictors of job-satisfaction are work, pay, promotion, work-environment, supervision, and co-workers (Sokoya, 2000). Irrespective of the theoretical approach to the study of job satisfaction, most of the research identifies at least two categories of predictor variables: environmental factors and personal characteristics (Ellickson & Logsdon, 2001). While for the measurement of outputs or results of job-satisfaction and dissatisfaction, employees' involvement and commitment (positive-outcomes) and absenteeism and turnover (negative results) are used as measures. Job satisfaction represents several related attitudes (Luthans, 2005:212). Job

satisfaction is often determined by how well outcome meet or exceed expectations. For instance, if organization participants feel that they are working much harder than others in the department but receiving fewer rewards they will probably have a negative attitudes towards the work, the boss and the coworkers. On the other hand, if they feel they are being treated very well and are being paid equitably, they are likely to have positive attitudes towards the job (Tella et al., 2007).

### **Predictors of Job-Satisfaction**

Through years, five factors of job satisfactions have been identified to represent the most important characteristics of a job about which employees have affective responses: work, pay, promotion, supervision and co-workers (Luthans, 2005:212). Job satisfaction represents several related attitude which are most important characteristics of a job about which people have effective response. Low wages and lack of status and social security, affect motivation. Job satisfaction can not be talked where there is absence of motivation. Age, sex, education level, compensation and benefits, work, advancement

opportunities and technological challenges also affects job satisfaction., meaningful working conditions, management policy, gaining respect, the size of organization and achievements through talents (Tella et al., 2007).

An extensive review of the literature indicates that the factors conducive to job satisfaction are: pay, work, environment, co-workers (Robbins, 1998:152). Similarly, “having adequate work equipment, resources, and training opportunities and an equitable workload distribution—also significantly and positively affect employee job satisfaction (Ellickson & Logsdon, 2001).” Other researchers measure job-satisfaction on the basis of “attitude to the job, relations with fellow workers, supervision, company policy and support, pay, promotion and advancement, and customers (DeVane & Sandy, 2003).” Luthans (2005:212) suggests work, pay, promotion, supervision and coworkers as the main determinants of job-satisfaction.

The job-dimensions like, work, pay, supervision, promotion coworkers and the demographic features of the employees and organization determine the job satisfaction (Shamil & Jalees,

2004). Similarly, other determinants are age, gender, education level, compensation and benefits, work, advancement opportunities, meaningful working conditions, management policy, gaining respect, the size of organization and achievements through talents (Saiyadain, 1998; Sokoya, 2000; Ellickson & Logsdon, 2001; DeVane & Sandy, 2003”). Thus, factors of job satisfaction are the main determinants of job satisfaction attitude in every organization, irrespective of any other factors that are specific to a particular context (Tella et al., 2007).

**Pay:** Pay is the first and very primary factor of satisfaction for almost every type of employee in public, private, small, medium and large organization. “Fair pay system is linked with job satisfaction (Naval & Srivastava, 2002).” The pay refers to “the amount of financial remuneration that is received and the degree to which this is viewed as equitable vis-à-vis that of others in the organization (Luthans, 2005:212).”

**Work/Job:** Employees tend to prefer jobs that give them opportunities to use their skills and abilities and offer a variety of tasks, freedom, and feedback on how well they are doing. Jobs that have too

little challenge create boredom, but too much challenge create frustration and a feeling of failure. Under conditions of moderate challenge most people will experience pleasure and satisfaction (Naval & Srivastava, 2002). Work plays a central role in people life, according to employees context it should be attractive and contribute to job satisfaction of employees (Tsigilis et al., 2006). Satisfaction with Work. Organizations have a greater chance of retaining their employees if they offer them jobs that are interesting, challenging, and give them a sense of accomplishment (Chughtai & Zafar, 2006).

Supervision: This is the function of leading, coordinating and directing the work of others to accomplish designated objectives. A supervisor guides their subordinates so that they produce the desired quantity and quality of work within the desired time. In short, a supervisor seeks to have the group accomplish the required work and likewise seeks to promote need satisfaction and high morale among the employees (Beach, 1998:341). The group having democratic style is more satisfied than group of autocratic leadership (Naval & Srivastava, 2002).

Promotion: The research in public and private sectors shows that “job satisfaction of municipal government employees is significantly influenced” by their perceptions of the promotional opportunities, which is the second most powerful determinant of employee job satisfaction (Ellickson & Logsdon, 2001; Shamil & Jalees, 2004; Robbins & Coulter, 2005; Tsigilis et al., 2006). Research tells that limited opportunities for promotion are common in public sector organization thereby preventing the qualified employees to remaining in the job (David & Wesson, 2001). Fair promotion is the recognition of employee, which increases satisfaction and enhances organizational commitment (Naval & Srivastava, 2002). Opportunity for advancement is a key motivator, and there is evidence from different levels of government that advancement opportunities are positively associated with job satisfaction (Moynihan & Pandey, 2007).

Work-Environment: Organizational climate is a powerful determinant of both productivity and employee satisfaction. Its influence is so strong that it can outweigh the impact of the quality of frontline leadership (Beach,

1998). Researchers found that job satisfaction of municipal employees depends more on environmental factors rather than personal attributes thereby requiring “a good employee-environment fit (Ellickson & Logsdon, 2001).” In a research, it was unearthed that poor working conditions effect job satisfaction negatively (Tsigilis et al., 2006).

Co-Workers: Organization’s social environment can affect employee job satisfaction, especially coworker interaction (Ellickson & Logsdon, 2001). Some says that task independence, increase in feeling of belongingness and coordination among employees and hence increases the degree of job satisfaction. Open communication can also increase job satisfaction (Naval & Srivastava, 2002). Workers’ satisfactions are more closely related to the content of their job and the relationship with coworkers and supervisors (Hiroyuki et al., 2007). However, there is also a potential downside to creating a strong group culture – it can lead to groupthink. This can lead to tolerance for behavior that damages performance, including corruption or incompetence, and has been at the heart of some major public

management failures (Moynihan & Pandey, 2007).

### **Criterion Variable (Consequences)**

Above cited factors of job satisfaction are used as the predictors of employee’s job satisfaction or dissatisfaction. The job satisfaction is mostly supposed to result into ‘involvement and commitment’ of the workforce in any organization. Similarly, dissatisfaction emerges into the ‘absenteeism and turnover’ attitudes among the workers and officers. Thus, both ‘Satisfaction’ (involvement and commitment) and ‘Dissatisfaction’ (absenteeism and turnover) can be predicted from the satisfaction level of the employees on different ‘factors of job satisfaction.

**Involvement:** Job-involvement is the physical, emotional and mental involvement of people in an activity like mental involvement in decision making (Beach, 1998:311). People with a high level of job involvement strongly identify with and care about the work they do (Robbins, 1998:142). Employees with a high level of job involvement strongly identify with and really care about the kind of work they do (Robbins & Coulter, 2005:375). Job involvement is primarily determined by the

individual's self-image and understanding of what is important in life, and then by the organizational characteristics (Moynihan & Pandey, 2007).

**Commitment:** Organizational commitment is a state in which an employee identifies himself/herself with a particular organization and its goals, and wishes to remain member of the organization (Robbins, 1998:142). Research suggests that organizational commitment also leads to lower levels of both absenteeism and turnover and, in fact, it is a better indicator of turnover than job satisfaction (Robbins & Coulter, 2005:375). It refers to the willingness of the worker to exert high levels of efforts on behalf of the organization with belief in and acceptability of the values and goals of the organization (Tella et al., 2007). An employee's commitment is reflected in a sense of loyalty and a reluctance to leave, which is determined by both the individual and the work environment. Thus, commitment is partly the result of individual attributes and partly the result of employees perceptions about the organization and work role (Moynihan & Pandey, 2007).

**Absenteeism:** This attitude reduces organizational effectiveness and efficiency by increasing labor costs (Rocca & Kostanski, 2001). Most researchers are of the view that higher the rate of absenteeism, the lower is the job satisfaction (Verma, 2004:194). Research shows that satisfied employees have lower level of absenteeism than do dissatisfied employees while it certainly makes sense that dissatisfied employees are more likely to miss work (Robbins & Coulter, 2005:375).

**Turnover:** It refers to the employee's intention to leave the organization. Employee turnover can involve substantial costs, only some of which may be readily apparent to the organization (Clark-Rayner & Harcourt, 2000). Those who are dissatisfied in their job become less committed or give up the profession altogether (Rocca & Kostanski, 2001). Research on the relationship between satisfaction and turnover is that much stronger satisfied employees have lower levels of turnover while dissatisfied employees have higher intentions to leave (Robbins & Coulter, 2005:375).

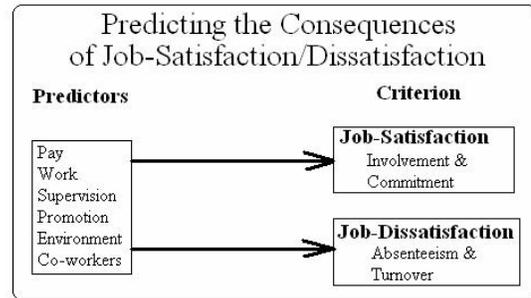
Table Showing List of the Research Variables

		Variables	Code
Predictors (Independent Variables)	1	Pay	<i>PAY</i>
	2	Work	<i>WRK</i>
	3	Supervision	<i>SUP</i>
	4	Promotion	<i>PRO</i>
	5	Work Environment	<i>WE</i>
	6	Co Workers	<i>CW</i>
Criterion (Dependent- variables)	1	Involvement and Commitment	<i>IC</i>
	2	<i>Absenteeism and Turnover</i>	<i>AT</i>

An analysis of the literature on the predictors and consequences of job satisfaction clearly suggests that there is a network of relationships between different variables in the job satisfaction attitude of the employees in any organization. Through factors of job satisfaction are universally reported as the prime determinants of job satisfaction or otherwise however, their impacts are not the same everywhere. In developing countries, the impacts change altogether due to the variations in cultures and resources, which change the priorities of communities. Regression analysis provide a measure of the impacts in a particular situation thereby guiding the managers concerned to effectively determine the impacts of a factor and then manage it accordingly.

### Theoretical Framework

Figure Showing Schematic Diagram of the Theoretical Framework



### List of Hypotheses

- Job-Satisfaction (Involvement & Commitment – I&C) is predicted by ALL the factors of job satisfaction [H<sub>1</sub>] – (Pay-H<sub>1a</sub>, Work-H<sub>1b</sub>, Supervision-H<sub>1c</sub>, Promotion-H<sub>1d</sub>, Environment-H<sub>1e</sub>, & Co-workers-H<sub>1f</sub>).
- Job-Dissatisfaction (Absenteeism & Turnover – A&T) is explained by ALL the factors of job satisfaction [H<sub>2</sub>] – (Pay-H<sub>2a</sub>, Work-H<sub>2b</sub>, Supervision-H<sub>2c</sub>, Promotion-H<sub>2d</sub>, Environment-H<sub>2e</sub>, & Co-workers-H<sub>2f</sub>).

### RESEARCH DESIGN

Job-satisfaction is a global phenomenon and a variety of research is going on to help organizations in satisfying their workforce. Likewise, volumes of surveys are being conducted to measure the employee attitudes towards the

dimensions of job-satisfaction, its facets the degrees to which workers are happy or otherwise from their job. The researchers are exploring “factors affecting employees satisfaction (Wiedmer, 1998)”, “personal predictors of job satisfaction for the public sector managers ... in a developing economy (Sokoya, 2000)”, “a comparative analysis among public versus private sector professionals (David & Wesson, 2001)”, “determinants of job satisfaction of Municipal Government employees (Ellickson et al., 2001)”, “identifying the job-satisfaction of Tutors (Beyth-Marom et al., 2006)” and “job satisfaction & burnout among Greek educators: A comparison between public and private sector employees (Tsigilis et al., 2006).”

This research applies survey approach with a structured questionnaire distributed among 217 District Executive Officers in Local Government System of NWFP, Province in Pakistan. 205 completed survey instruments were

returned giving 94.47% of return rate. The questionnaire included questions about 5-demographic (department, designation, qualification, gender and length of service) and 8-research variables (pay, work, supervision, promotion, environment, co-workers – plus involvement & commitment and absenteeism and turnover (see Tables 2.1 and 2.2 for details). 7-point Likert scale was used where 1 = strongly disagree, 2 = disagree, 3 = mildly disagree, 4 = neutral, 5 = mildly agree, 6 = agree and 7 = strongly agree. All the primary data was inserted into SPSS 12.0 to create a database for analysis.

The Reliability-analysis gave Cronbach’ Alpha of 0.906 for 34 items. Descriptive tables were generated about the respondents and research variables. For testing of the hypotheses multiple regression was used to measure the predicting powers of the factors of job satisfaction for the involvement, commitment, absenteeism and turnover.

**EMPIRICAL FINDINGS**

**Descriptive Results**

Table Showing Descriptive Statistics on Research Variables (n=205)

	Variables	Min	Max	Mean	Std. D
1	Pay	2.00	6.50	5.0378	.96576
2	Work	1.00	7.00	5.2049	1.37715
3	Supervision	1.25	6.50	4.7939	.92117
4	Promotion	1.00	6.67	5.0033	1.23184
5	Environment	1.33	6.67	4.1951	1.01400
6	Coworkers	1.00	6.75	4.8073	1.25027
7	Involvement & Commitment	1.67	6.00	4.2203	.78597
8	Absenteeism & Turnover	2.50	6.17	4.8724	.66224

Table Showing Correlations between Predictor and Criterion Variables

		PAY	WRK	SUP	PRO	ENV	COW	I&C	A&T
PAY	<i>r</i>	1	.564	.650	.952	.363	.838	.355	.529
	<i>p</i>		.000	.000	.000	.000	.000	.000	.000
WRK	<i>R</i>		1	.641	.609	.333	.596	.291	.262
	<i>P</i>			.000	.000	.000	.000	.000	.000
SUP	<i>R</i>			1	.677	.399	.661	.581	.536
	<i>P</i>				.000	.000	.000	.000	.000
PRO	<i>R</i>				1	.426	.899	.337	.434
	<i>P</i>					.000	.000	.000	.000
ENV	<i>R</i>					1	.578	.603	.459
	<i>P</i>						.000	.000	.000
COW	<i>R</i>						1	.348	.399
	<i>P</i>							.000	.000

Correlation is significant at the 0.01 level (2-tailed).

**Testing of Hypotheses**

Table Showing Prediction of Involvement & Commitment

R	R Square	Adjusted R Square	Std. Error of the Estimate	F	Sig.
.778(a)	.605	.593	.50145	50.529	.000(a)
Unstandardized Coefficients		Standardized Coefficients			
	B	Std. Error	Beta	t	Sig.
(Constant)	.415	.265		1.563	.120
Pay	.418	.122	.513	3.437	.001
Work	-.061	.035	-.107	-1.735	.084
Supervision	.520	.057	.609	9.101	.000
Promotion	-.207	.119	-.324	-1.733	.085
Environment	.490	.044	.633	11.040	.000
Coworkers	-.311	.074	-.495	-4.191	.000

a. Predictors: PAY, WRK, SUP, PRO, ENV, & CW  
 b. Dependent Variable: Involvement & Commitment

Above table tells that 61% (R<sup>2</sup>=.605) of the involvement and commitment is explained by the predictors. For example, pay, supervision, environment and coworkers are significantly influencing the criterion variable, while

work and promotion are not related with the involvement and commitment. Four out of six variables are explaining the dependent variable with very significant *p*-values of .000, a hundred percent significance.

Table Showing Prediction of Absenteeism & Turnover

R	R Square	Adjusted R Square	Std. Error of the Estimate	F	Sig.
.754(a)	.568	.555	.44188	43.365	.000(a)
Unstandardized Coefficients			Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
(Constant)	1.276	.234		5.458	.000
Pay	.909	.107		8.487	.000
Work	-.074	.031		-2.404	.017
Supervision	.318	.050		6.316	.000
Promotion	-.483	.105		-4.591	.000
Environment	.290	.039		7.404	.000
Coworkers	-.191	.065		-2.921	.004

a. Predictors: PAY, WRK, SUP, PRO, ENV, & CW  
 b. Dependent Variable: Absenteeism & Turnover

The regression of the factors of job satisfaction on absenteeism and turnover is highly significant because each of the factors is making contribution to the variation in the dependent variable. Though 57% of the criterion is explained by the predictors, however all the predictors are involved in the prediction process.

**DISCUSSION**

Several researchers have used regression tools to predict job satisfaction with help of factors of job satisfaction, demographic attributes of the employees or both (see for example, Wiedmer, 1998; Sokoya, 2000; Ellickson &

Logsdon, 2001; DeVane & Zhan, 2003; Moynihan & Pandey, 2007; Tirmizi et al., 2008). For example, a researcher used job characteristics to predict job satisfaction among public sector managers (Sokoya, 2000). Likewise, in another research, the employee motivation, commitment, and job satisfaction were predicted by the personal attributes and work characteristics (Moynihan & Pandey, 2007). Tirmizi et al., (2008) used age and tenure to explain and predict job satisfaction of the public sector managers. Both factors and job satisfaction and demographics have impacts, which vary from situation to

situation. This study revealed the following relationships between the factors of job satisfaction and the consequences (involvement/commitment and absenteeism/turnover). Following table gives a summary of the findings.

Table Showing the Summary of Regression Analysis

	Predictors	Involvement & Commitment $R^2 = .605 (61\%)$	Absenteeism & Turnover $R^2 = .568 (57\%)$
		Sig.	Sig.
	(Constant)	.120	.000
1	Pay	.001	.000
2	Work	.084	.017
3	Supervision	.000	.000
4	Promotion	.085	.000
5	Environment	.000	.000
6	Coworkers	.000	.004
		4/6 = 67%	6/6 = 100%

- The hypothesis 1 (with 6 sub-hypotheses) about ‘Job-Satisfaction (Involvement & Commitment) is predicted by ALL the factors of job satisfaction’ has been partially substantiated. Pay- $H_{1a}$ , Supervision- $H_{1c}$ , Environment- $H_{1e}$ , & Co-workers- $H_{1f}$ , (four hypotheses) has been substantiated while Work- $H_{1b}$ , & Promotion- $H_{1d}$ , have no role in explaining the involvement and commitment of the employees.
- However, Job-Dissatisfaction (Absenteeism & Turnover) is explained by ALL the factors of job satisfaction. All the sub-hypotheses stand thereby rejecting the null hypotheses relating to the variables. Starting from Pay- $H_{2a}$ , Work- $H_{2b}$ , Supervision- $H_{2c}$ , Promotion- $H_{2d}$ ,

Environment- $H_{2e}$ , & Co-workers- $H_{2f}$ , - all alternative hypotheses have been accepted.

**More precisely,**

- 61% ( $R^2=.605$ ) of involvement and commitment is predicted by the factors of job satisfaction.
- However, 4 out of 6 (67%) of the factors of job satisfaction are explaining the involvement and commitment. Work and Promotion do not predict the dependent variable with  $p$ -values of .084 and .085 respectively. Work and Promotion are not explaining the variation in dependent variable. It means that satisfaction from work and promotion are meaningless or very weak, for example, both the variables are making significant

contributions in explaining the Negative effects (absenteeism and turnover) with *p-values* of 0.017 and 0.000.

- Likewise, 57% ( $R^2=.568$ ) of variation in absenteeism and turnover is created by the factors of job satisfaction.
- Surprisingly, however, all the 6 out of 6 (100%) factors are playing role in predicting the absenteeism and turnover behavior.

## CONCLUSIONS

Public sector workers are usually shown to be lower in job satisfaction and organizational commitment relative to their counterparts in the private sector. Virtually all cross-sector comparative studies, however, have focused on work settings in relatively industrialized nations and the developing nations remain understudied (Munyah, 2000). There is now a renewed interest in the performance level of the public sector in many developing economies, as they face a more competitive global environment. Efforts to improve the performance level of the public sector focus on both personal and contextual variables. Different studies have shown

that employees' attitudes towards work do affect their performance, and in turn the attitudes of employees are influenced by personal characteristics and job characteristics (Sokoya, 2000). Thus, job satisfaction is a multifaceted construct that includes employee feelings about a variety of intrinsic and extrinsic job elements and consists of global and facet dimensions (Kuchinke et al., 2009).

As the literature review reveals that pay, work, supervision, promotion, environment and coworkers are the leading predictors of job satisfaction or dissatisfaction. Our findings verify the impacts of these factors on both positive and negative consequences in the attitude of employees. However, it is notable that when analyzed at the single factor level, the role of each factor is quite different from the other. For example, work and promotion are surprisingly silent in predicting the involvement and commitment whereas work and work characteristics have widely been found critical in explaining the satisfaction or dissatisfaction attitudes of the employees across public and private sectors around the world (Moynihan & Pandey, 2007).

It is therefore recommended that job satisfaction of the DEOs should be handled categorically in the sense that the role of every single factor of job satisfaction should be analyzed separately as well collectively. Decisions based on the average scores on different factors of job satisfaction can be misleading however, the regression of the each variable on the satisfaction and dissatisfaction will compute the degrees of impact by each variable and thus guide the managers more accurately.

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# **A COMPARATIVE STUDY OF IN-SERVICE PROMOTED AND DIRECTLY SELECTED SUBJECT SPECIALISTS REGARDING CHARACTER BUILDING OF THE STUDENTS AT HIGHER SECONDARY SCHOOL LEVEL**

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## **ABSTRACT**

This paper is designed to compare the teaching effectiveness of promoted in-service and directly selected subject specialists of higher secondary schools on the aspect of character building of the students. Promoted and selected subject specialists are working in the higher secondary schools of the country. Selected subject specialists are appointed directly by the provincial public service commission to the posts of higher secondary school teachers. Promoted subject specialists who teach in the high/higher secondary schools against some junior position as Senior English teacher in BPS-16, they have master degree in education, and when they promoted they become subject specialists. In this study sixteen higher secondary schools were selected in four districts namely DIKhan, Lakki, Bannu and Peshawar, and from each higher secondary school two subject specialists (one promoted and one selected) were selected through simple random sampling technique. In this study from sixteen higher secondary schools all sixteen Principles were selected to collect the data and total thirty-two subject specialists were selected as a sample teacher. Two colleagues subject specialist working with each promoted and selected subject specialists since last two years, and four students of each sample teacher were also selected by random sampling technique, it included 32 colleague teachers and 64 students. In this way sampling was done in case of selection of students, sample teachers, colleague teachers and promoted and selected subject specialists so the total sample size was 144. Three Likert type five points rating scales were developed and validated for students, colleagues and head teachers respectively. Each rating scale was comprised of 06 items to collect the data on the character building of the students. Data were collected in person "t" test and co-efficient of variation were applied to analyze the data at 0.05 level of significance. It was concluded that the performance of promoted subject specialists was better than the selected subject specialists regarding character building of the students.

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## **INTRODUCTION**

Education plays a very crucial role in the development of character of the individuals. Education is mostly viewed

as the rational, moral and ethical training of individuals through which their potentialities are developed, and the culture of the people is transmitted to the

coming generations. So such a person should be a teacher who commands the respect of pupils by virtue of what he is. Keeping in view the fundamental, crucial and essential role of teachers, due attention should be paid to the recruiting and enrollment process of the teachers. Those teachers should be selected who have high commitment and positive professional attitude towards the teaching because due to the positive attitude of teachers we can develop the character of our students or we can change the negative behavior of our students. Teachers training, their professional commitment, knowledge, positive attitude and experience are the variables, which directly affect the character of the students. The teachers have to make them good individuals, good citizens, committed patriot and good workers at this crucial stage. In this way, the secondary education demands for committed and dedicated teachers. The fulfillment of such needs and objectives depends upon the teachers and this duty is assigned to the promoted and selected higher secondary school teachers.

#### **STATEMENT OF THE PROBLEM**

This study was designed to compare the teaching effectiveness of promoted in-service and directly selected subject specialists regarding character building of the students at higher secondary schools level.

#### **OBJECTIVES OF THE STUDY**

Following was the objective of the study: -

- i) To compare the teaching effectiveness of promoted in service and directly selected subject specialists regarding character building of the students.

#### **SIGNIFICANCE OF THE STUDY**

Following points highlight the significance of the study:

- i) This study may help the educational decision makers and policy makers in better understanding subject specialists regarding character building of the students.
- ii) This study may also help the educational administrators and policy makers to decide appropriate criteria of appointments and quota of promotion and direct selection of the teachers.

- iii) The study results may provide basis for further research in this area.

variation.

### **HYPOTHESES OF THE STUDY**

Following null versus alternative hypotheses were developed and tested.

$H_0$  There is no significant difference between the concerts of promoted in service and directly selected subject specialists regarding character building of the students.

$H_1$  There is significant difference between the concerts of promoted in service and directly selected subject specialists regarding character building of the students.

### **EXPLANATION OF TERMS AND ABBREVIATIONS**

Terms and Abbreviations used in the study are as under: -

- a.  $\alpha$  Level of significance.
- b. d.f Degree of freedom.
- c. SET Senior English Teacher.
- d. SS Subject Specialist.
- e. B.Ed Bachelor of Education.
- f. M.Ed Master of Education.
- g. C.V Co-efficient of

### **REVIEW OF RELATED LITERATURE**

#### **Character Building of the Students**

Mohanty (2003), Knowledge about the Students: The teacher should know his students their background, their needs, their interests, their previous knowledge or entry behavior, their language level, even their personal problem if possible. Student should not be regarded just as young children or mature adults but individuals with growing mental, physical or emotional abilities. Authority or power cannot control them. They should be convinced that what you want to do is for their good. They should be encouraged to think and reason, not to memorize blindly and reproduce in the examination paper. Teacher should know students' previous knowledge, the level of their knowledge and understanding in the topics so that they can teach accordingly. Similarly, they should have the students' language level so that they can communicate with them effectively and intelligently. They should also know the interests, attitude and needs of students so that teaching can be related with the areas of their

interest and be made more relevant and meaningful. It would give teacher dividends if teachers can know about their personal problems and be sympathetic in helping them to overcome their difficulties. (p.206)

Aggarwal (1995), *Love for children*: It has been said that if a teacher does not actually like boys and girls, he should give up teaching. He must enjoy company in groups. A good teacher feels that the young constantly supply some sort of energy. "Love the child and the child will love you; hate the child and child will hate you" is a famous maxim. One who does not like children should not stay in teaching. (p.406)

Aggarwal (1995), *Character and personality*: The character and personality of the pupils cannot be developed if the teacher who is the model to follow lacks character and personality. 'Example is better than precept' is an old saying is absolutely true in the teaching profession. No amount of sermons from the teacher can make much headway. A teacher teaches not only by 'what he say and does' but very largely by 'what he is'. Children are imitative and suggestive by nature. They imitate the dress, voice, habits and

manners of their teachers. The likes and dislikes of the teachers become their likes and desires. (p.408)

A teacher can serve the nation by promoting positive attitudes and developing desirable behavior among the students, A Muslim teacher is expected as a moral booster and it is said that "a person, who teaches the students but not care of their moral training, may called a servant not a teacher". A teacher can perform this duty during his classroom teaching effectively but there is a need of his positive approach.

Mayor (1987), "The oral interaction which occurs in the classroom affects the personality development, intellectual development and social development of students and teachers". (p.237)

Character building is the main objective of education. Religious and social values, norms, beliefs and ethics are taught to-the individuals to promote their knowledge and to build up their character in a desirable way. Education with the purpose of character building provides good individuals and good citizens who form an honest society and constitute a well-disciplined nation. Teacher is a character builder as well as a nation builder. His profession demands

for a special care, attention and commitment with reference to character formation at secondary level, which is a crucial stage of teaching and learning.

A teacher works as character builder of young nation. Different indicators about character building of the students, moral and ethical training, to what extent the teacher cares the training of the students, positive change in their behavior as well as the effective domains of the teaching etc which are the angles should be focused by the teacher.

### **RECRUITMENT OF SUBJECT SPECIALISTS IN PAKISTAN**

Teachers, for teaching to class 11-12 (1<sup>st</sup> year and 2<sup>nd</sup>) year in Government higher secondary schools are appointed/recruited by the concerned authorities at District and Provincial level. Vacancies are announced through national newspapers for appointments.

#### **Higher Secondary Schools:**

Afridi (1998), "Higher secondary schools include 1<sup>st</sup> year and 2<sup>nd</sup> year arts and science classes. Minimum qualification for teachers B.A/B.Sc or M.A/M.Sc with B.Ed as subject specialists". (p.187) Afridi (1998) Terms & Conditions of Employment are as follow:

<b>Nomenclature of Post</b>	<b>Qualification for Recruitment</b>	<b>Scale</b>	<b>Schools</b>
S.E.T(Senior English Teacher)	B.A/B.Sc B.Ed	BPS-16	High Schools & Higher Secondary Schools
Subject Specialist	M.A/M.Sc B.Ed	BPS-17	Higher Secondary Schools

### **Higher Secondary School Teachers and their Recruitment**

Higher secondary school teachers are M.A/M.Sc with B.Ed and eligible for teaching to class 11<sup>th</sup> and 12<sup>th</sup>. They are specialized in science or arts disciplines. Fresh appointments of subject specialists are made through provincial Public Service Commission, and the education department makes in-service promotions. In this way generally two types of higher secondary school teachers are serving in the existing set up of Government higher secondary schools in Pakistan.

#### **In-Service Promotion of Higher Secondary School Teachers**

In high and higher secondary schools senior English teachers are working in BPS-16 with the qualification of B.A/B.Sc with B.Ed, but when they pass their M.A/M.Sc exam they are eligible for the subject specialist with BPS-17 in

their relevant subjects so they promoted in-service and become the subject specialist. They have not to qualify any test or examination for the purpose. Promoted subject specialists are upgraded to higher scales without any test, just after the verification of their service records and degrees on seniority basis by the Director of Secondary Education (D.S.E) / Executive District Officer education (E.D.O.Edu).

### **Direct Selection of Secondary School Teachers**

Selected subject specialists are those, who are directly selected through provincial Public Service Commission as fresh candidates. Most of them are fresh and newcomer in education department as teachers. In the same way their recruitment criteria are also different. Selected subject specialists have to pass job orientation test as well as interview. There is 50% reserved quota for direct and fresh appointments as subject specialists. Working teachers are also eligible for the posts, but most of the selected subject specialists are fresh.

## **METHODOLOGY OF THE STUDY**

### **Procedure of the Study**

The study aimed at comparing the concert of in-service promoted secondary school teachers and direct selected by the Public Service Commission higher secondary school teachers in DIKhan, Lakki, Bannu and Peshawar district. It was basically of descriptive nature and required a survey to collect the data.

### **Population**

The population of the study consisted of all students of eleven and twelve class (1<sup>st</sup> year and 2<sup>nd</sup> year). All subject specialists was including those are serving in Government higher secondary schools and the head teachers of these schools.

### **Sample**

Four districts (DIKhan, Lakki, Bannu and Peshawar) were selected randomly and from each district four higher secondary schools were selected randomly, so total sixteen higher secondary schools were selected. From each higher secondary school two subject specialists (one promoted and one selected) were selected through random sampling technique, so total thirty-two subject specialists were selected as a sample teacher. From sixteen higher secondary schools all

sixteen Principles were selected to get the data. Two colleagues' higher secondary school teachers working with each promoted and selected subject specialists since last two years, and four students of each sample teacher were also selected by random sampling technique. It included 32 colleague teachers and 64 students. Sixteen Head teachers (Principles) of the concerned schools were also included in the sample to get their opinion about the teaching effectiveness of promoted and selected subject specialists. In this way sampling was done in case of selection of students, sample teachers, colleague teachers, promoted and selected subject specialists.

**The description of the sample is given**

**below:**

Distt	Principles	Sample Teacher	Colleague teachers	Pupils	Total
DIKhan	4	8	8	16	36
Lakki	4	8	8	16	36
Bannu	4	8	8	16	36
Peshawar	4	8	8	16	36
Total	16	32	32	64	144

**INSTRUMENTS**

**Rating Scale for Students**

Rating scale for students was developed to get the opinion of the students about the teaching effectiveness regarding

character building the students. This five point rating scale consisted of 06 items on each indicator of minimum performance criteria. This scale was filled by twenty students of five different higher secondary schools for try out purposes. The Rating Scale was improved in the light of feedback, difficulties and ambiguities pointed out by the students and in consultation with the experts in the relevant field. Its Urdu version was used to collect the data from the students.

**Rating Scale for Colleagues**

Rating scale for colleagues was developed to get the opinion of the colleagues about the teaching effectiveness regarding character building the students. This scale was got filled from ten higher secondary school teachers of five different schools for try out purposes. The Rating scale was improved in the light of difficulties and ambiguities pointed out by the teachers and also in consultation with the experts in the relevant field.

**Rating Scale for Head Teachers**

A Rating scale for head teachers consisting of 06 statements was developed to collect the opinions of heads of institutions regarding the

teaching effectiveness on the aspect of character building the students. It was tried out in five higher secondary schools as five head teachers used it and it was improved in the light of their observations.

- a. **Rating Scale for Students** To get the opinion of the students with regard to sample teachers regarding of character building the students.
- b. **Rating Scale for Colleagues** To gather data on the teacher's colleagues' opinion on the teaching effectiveness of sample teachers regarding character building the students.
- c. **Rating Scale for Head Teachers** To collect the opinion of the heads of institutions regarding the overall teaching effectiveness of sample teachers for character building the students.

### Data Collection

The data were gathered with the help of three instruments as detailed below:

- a) The data were collected through rating scale from the students. Four students of each sample teacher were asked to give their opinion regarding the teaching effectiveness regarding character building the students. This rating scale was got filled from 64

sample students taught by the sample teachers.

- b) Colleagues also provided data through another rating scale. Two colleagues of each sample teacher were asked to give their opinion regarding character building the students. Thirty-two colleagues of sample teachers provided the data.
- c) The data regarding the performance of sample teachers as viewed by head teachers were collected with the help of rating scale for head teachers. 16 head teachers filled this scale.

### Scoring Procedure

The responses of each sample were counted separately. The data were converted into quantitative form. Each response was given quantitative value accordingly i.e. Excellent 5, Good 4, Average 3, Poor 2 and Very Poor 1.

### Analysis of Data

The data collected through Rating Scale for students, colleagues and head teachers were organized and arranged separately. The scores of all samples were calculated, summed and mean scores were calculated, "t" test and coefficient of variation was used as statistical technique to compare the significance of difference between the

means performance of promoted and selected subject specialists.

Chaudhary (1996), “The co-efficient of variation is also used to compare the performance of two candidates” (p.106).

Alam (2000), “Consistency or stability is used as terms opposite to variation (or dispersion). A data is considered more stable if it has less variation and likewise it is less stable if variation is more”. (p.151)

The applied formulae of test were as under:

$$t = \frac{(\bar{x}_1 - \bar{x}_2) - (\mu_1 - \mu_2)}{S_p \sqrt{\frac{1}{n_1} + \frac{1}{n_2}}} \quad \text{With } v = n_1 + n_2 - 2 \text{ df}$$

Where

$$\bar{X}_1 = \frac{\sum f_1 x_1}{\sum f_1} \quad \bar{X}_2 = \frac{\sum f_2 x_2}{\sum f_2}$$

$$S_p^2 = \frac{(n_1 - 1)S_1^2 + (n_2 - 1)S_2^2}{n_1 + n_2 - 2}$$

$$\text{Where } S_1^2 = \frac{1}{n_1 - 1} \sum (X_{1i} - \bar{X}_1)^2 \text{ And } S_2^2 = \frac{1}{n_2 - 1} \sum (X_{2i} - \bar{X}_2)^2$$

$$\text{Co-efficient of Variation } CV = \frac{S}{\bar{X}} \times 100$$

Where S = standard deviation and  $\bar{X}$  = Mean

The analysis and interpretation of data is presented in tabular form in the forthcoming pages. The findings were drawn, conclusions were arrived and recommendations have been made accordingly.

**Analysis and Interpretation of Data**

The study aimed at comparing the promoted and selected subject specialists regarding character building the students in D.I.Khan, Peshawar, Lakki and Bannu district.

**Comparison and Interpretation of the Data Collected Through Rating Scale for Students**

The analysis of data collected through “Rating Scale for students” is presented in the following.

**Comparison of promoted and selected subject specialists regarding character building of students**

Group	N	Group Mean	SD	C.V	d.f	$\alpha$	t-tabulated	t-Calculated
Promoted SS	16	28.97	2.34	8.08	30	0.05	2.042	6.81
Selected SS	16	22.39	3.65	16.30				

The above table indicates that the mean of teaching effectiveness of promoted and selected subject specialists groups were 28.97 and 22.39 respectively, SD in the scores of two samples was 2.34 and 3.65 respectively. The obtained t-Calculated value 6.81 is greater than then the t- tabulated 2.042 so we reject  $H_0$  and accepts  $H_1$  and concludes that there is significant difference between the teaching effectiveness promoted and selected subject specialists on the aspect

of character building of the students. The difference was in the favour of promoted subject specialists. The Co-efficient of Variation (C.V) of promoted and selected subject specialists is 8.08 and 16.30 respectively. Since C.V of promoted subject specialists is less than the selected subject specialists so there is consistency in the teaching effectiveness of promoted subject specialists on the aspect of character building of the students.

**Comparison and Interpretation of the Data Collected Through Rating Scale for Colleagues**

The analysis of data collected through "Rating Scale for Colleagues" is presented in the following.

**Comparison of promoted and selected subject specialists regarding character building of students**

Group	N	Group Mean	SD	C.V	d.f	$\alpha$	t-tabulated	t-Calculated
Promoted SS	16	27.55	4.21	15.28	30	0.05	2.042	6.29
Selected SS	16	20.97	4.79	22.84				

The above table indicates that the mean of teaching effectiveness of promoted and selected subject specialists groups were 27.55 and 20.97 respectively, S.D in the scores of two samples was 4.21

and 4.79 respectively. The obtained t-calculated value 6.29 is greater than then the t- tabulated 2.042 so we reject  $H_0$  and accept  $H_1$  and conclude that there is significant difference between the teaching effectiveness of promoted and selected subject specialists on the aspect of character building of the students. The difference was in the favor of promoted subject specialists. The co-efficient of variation (C.V) of promoted and selected subject specialists is 15.28 and 22.84 respectively. Since C.V of promoted subject specialists is less than the selected subject specialists so there is consistency in the teaching effectiveness of promoted subject specialists on the aspect of character building of the students.

**Comparison and Interpretation of the Data Collected Through Rating Scale for Head Teachers**

The analysis of data collected through "Rating Scale for Head Teachers" is presented in the following.

**Comparison of promoted and selected subject specialists regarding character building of students**

Group	N	Group Mean	SD	C.V	d.f	$\alpha$	t-tabulated	t-Calculated
Promoted SS	16	26.79	1.21	4.52	30	0.05	2.042	3.91
Selected SS	16	20.12	1.98	9.84				

The above table indicates that the mean of teaching effectiveness of promoted and selected subject specialists groups were 26.79 and 20.12 respectively, SD in the scores of two samples was 1.21 and 1.98 respectively. The obtained t-calculated value 3.91 is greater than then the t- tabulated 2.042 so we reject  $H_0$  and accept  $H_1$  and conclude that there is significant difference between the teaching effectiveness of promoted and selected subject specialists on the aspect of character building of the students. The difference was in the favor of promoted subject specialists. The co-efficient of variation (C.V) of promoted and selected subject specialists is 4.52 and 9.84 respectively. Since C.V of promoted subject specialists is less than the selected subject specialists so there is consistency in the teaching effectiveness of promoted subject specialists on the aspect of character building of the students.

## **DISCUSSION**

On the basis of the analysis, this null hypothesis was tested. “There is no significant difference between the mean performance score of promoted and selected higher secondary school teachers regarding character building of

the students”. This hypothesis was rejected because t-values of the student’s, colleague’s and head teacher’s opinion score were calculated as 6.81, 6.29 and 3.91 respectively which were more than the tabulated t-value i.e. 2.042 at 0.05 level of significance. It was concluded that the promoted subject specialists had performed better on the character building aspects. The better performance of the promoted subject specialists may be due to the experience of promoted higher secondary school teachers, which helped them in better character building of the students.

These results support the findings of research conducted by Shah, (2007) study entitled “A Comparison between the Performance of in-service promoted and directly selected (By the public Service Commission) Secondary School Teachers in Rawalpindi District” It concluded that; “It was concluded that the Promoted SSTs had performed better on “Character building aspects”. (p.67)

## **SUMMARY**

Promoted and selected higher secondary school teachers are being posted in the higher secondary schools of the country. Selected higher secondary school teachers are those who arc posted

directly to the posts of subject specialist as compared to the promoted higher secondary school teachers who are teaching in the schools against some junior position and scale having the same master degree in M.A, M.Sc. Most of them acquire their requisite qualification as private candidates prior to their promotions as higher secondary school teachers. The in-service promotion and direct selection provide equal chance to serve as higher secondary school teacher to both categories of teachers. Higher secondary school teachers have to educate the young generation of the nation who are considered the learners of a very crucial stage. The teachers have to make them good individuals, good citizens, committed patriot and good workers at this crucial stage. In this way, higher secondary education demands for committed and dedicated teachers. The fulfillment of such needs and objectives depends upon the teachers and this duty is assigned to the promoted and selected higher secondary school teachers.

Keeping in view these two modes of posting of these teachers, it was considered imperative to conduct a study in order to compare their teaching

effectiveness, because perhaps no such study appears to have been conducted. This study was basically of descriptive nature.

## **FINDINGS**

Following were the findings of the study. The findings have been given in accordance with the selected indicators of teaching effectiveness of teacher's.

### **Character building of the students**

#### **1. Findings from the rating scale of students**

The mean score of promoted subject specialists group on rating scale for students was 28.97 as compared to 22.39 of selected subject specialists group, which indicates that there was significant difference in the mean performance score of promoted and selected subject specialists, the difference being in favor of promoted subject. The co-efficient of variation (C.V) of promoted and selected subject specialists is 8.08 and 16.30 respectively. Since C.V of promoted subject specialists is less than the selected subject specialists so there is consistency in the teaching effectiveness of promoted subject specialists on the

aspect of character building of the students.

## **2. Findings from the rating scale of colleagues**

The mean score of promoted subject specialists group on rating scale for colleagues was 27.55 as compared to 20.97 of selected subject specialists group, which indicate that there was significant difference in the mean performance score of promoted and selected subject specialists the difference being in favor of promoted subject specialists. The co-efficient of variation (C.V) of promoted and selected subject specialists is 15.28 and 22.84 respectively. Since C.V of promoted subject specialists is less than the selected subject specialists so there is consistency in the teaching effectiveness of promoted subject specialists on the aspect of character building of the students.

## **3. Findings from the rating scale of head teachers**

The mean score of promoted subject specialists group on rating scale for head teachers was 26.79 as compared to 20.12 of selected subject specialists group, which indicates that there was

significant difference in the mean performance score of promoted and selected subject specialists the difference being in favor of promoted subject specialists. The co-efficient of variation (C.V) of promoted and selected subject specialists is 4.52 and 9.84 respectively. Since C.V of promoted subject specialists is less than the selected subject specialists so there is consistency in the teaching effectiveness of promoted subject specialists on the aspect of character building of the students.

## **CONCLUSION**

On the bases of findings it is concluded that promoted subject specialists performed better than the selected subject specialists regarding character building of the students.

## **RECOMMENDATIONS**

On the bases of findings and conclusions of the study, following recommendations are made: -

- a. Teacher may be study the Islamic books along with the textbooks for the improvement of character of the students. School may be arranged all such books.
- b. M.A/B.Ed and M.Sc/B.Ed subject specialists may be provided

opportunities to improve their academic qualification during service in the area of education like M.Ed.

c. A proper system of continuous evaluation may be made in all higher secondary schools. The head teachers and senior staff may diagnose the weak aspect of the subject specialists and necessary measures may be taken for the improvement of subject specialists.

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# EFFECT OF COMPUTER ASSISTED INSTRUCTION ON THE ACADEMIC ACHIEVEMENT AND INTEREST OF SECONDARY SCHOOL STUDENTS

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## ABSTRACT

The Problem under investigation was “Affect of Computer Assisted Instructions on the Academic achievement and Interest of secondary school students”. Significance of this study was to know that whether the computer assisted instructions method of teaching had positive effect on the academic achievement and interest of the secondary school students, so that this method could be implemented at the secondary level. For the said purpose an experiment was performed at the university wensam college Dera Ismail Khan. Two equal groups of students were made on the basis of pre-test, one control group was taught by the traditional lecture method and the other experimental group was taught by the computer assisted instruction method. Post achievement test was conducted after one month teaching and the data was analyzed. The interest of the students in the two different methods of teaching was calculated by the interest inventory. Findings of the study show that the experimental group performed much more better than the control group in the academic achievement test. Moreover the interest score of the experimental group was higher than the control group. Therefore it was concluded that the computer assisted method of instruction has positive effect on the academic achievement and the interest of the students at secondary level. It was suggested that the study might be conducted at the primary level in the schools.

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## INTRODUCTION

It is the age of science and technology.

Our dependency on the science and technology has been very much increased (Parker, 1993).

Science is taken from Latin world scientia which means to know. Science develops the principles, laws, rules and regulations that are based on facts. Scientists always keep on collecting data through observation, and experiments (Waheed and Rasheed, 1993).

Today we are enjoying the benefits of science. Science makes our life very comfortable. Science benefited us in agriculture, transportation, exploration and all other fields of life. Most of the

benefits of science are due to physics, which is the most beneficent and ever developing field of science. Physics make our life very easy and comfortable. Physics brought such wonderful changes in the social life of human being that could not be thought in past. Man of today sitting in home watches the changes taking place in different continents of the world through satellite communication. It is due to physics that we are living in the word of electricity, air conditioners, refrigerators, radio, wireless, telephone, telegraph and computers. Which made our life most comfortable (Khatak, 2007)

Physics also helped in transportation and due to it man can cover the thousands km distance in minutes and seconds. Physics also helped in the space exploration and astronomy, and that is why man step on moon on one side and the deepest earth of the sea on the other. He has been able to observe the moments of smallest particles of the atom such as electron, proton, and neutron on microscopic level and observes the farthest stars and galaxies with telescope. The energy plays a vital role in the human life. The physics had made possible to achieve energy not only from the coal, petrol etc but it has also extracted energy from the core of the atom. It is due to physics that developments in the field of energy are being made and new weapons are being developed which put the world in a new era, which is truly called the era of computer and technology (Khatak, 2007). Keeping in view the importance of physics, the achievement of the students in the subject is not up to the mark. There may be many reasons for that but the experts suggest that the main reason of it is that the physics is taught with the traditional lecture method and new methods of teaching are totally

rejected. Books of physics are translated by the teachers in the school and only memorization is given the importance for the sake of examination. This is not justice with the teaching of physics. This situation calls for a change in the teaching method of physics. The method of teaching in the science curriculum should be such that it compel the students on thinking, and through their efforts, interests and practical work the student be able to reach the conclusion.

The problem of teaching of physics can be solved by adopting and practicing the computer assisted instructions method of teaching physics. The multimedia slides, presentations and the use of computer programs may be able to motivate students, develop interest in them, and stress them hooked until they may be able to solve the problems in the field of physics. This study is undertaken to see whether the computer assisted instructions method of teaching physics by using the computer programs, slides, projectors, CD's , and tutorials has a positive effect on the academic achievement and the interests of the secondary school students.

So the need is to find the comparative effectiveness of teaching physics with

the help of traditional lecture method and by using the computer assisted instructions method.

### **STATEMENT OF THE PROBLEM**

The problem under study was to find the effect of computer assisted instructions on academic achievement and interest of secondary school students. The study finds the comparative effectiveness of teaching physics with the help of computer assisted instructions method of teaching and traditional lecture method. The study also attempts to see which of these two methods has a positive effect on the academic achievement and interests of the secondary school students in Pakistan.

### **OBJECTIVES OF THE STUDY**

The main objective of the study is to find the comparative effectiveness of Computer Assisted Instructions method of teaching and traditional Lecture method of teaching in the subject of physics. The study also sees which methods had a positive effect on the academic achievement and interests of the students. Keeping in view the main objectives, the following sub objectives are formulated,

1. To find the students overall academic achievement through lecture

method and through Computer Assisted Instructions method.

2. To find the students interest in the lecture method and in the Computer Assisted Instructions through interest inventory.

To find the time taken by the teacher, teacher+students and students in the computer Assisted Instructions and in traditional Lecture Method.

### **SIGNIFICANCE OF THE STUDY**

This study is significant due to the following reasons:-

1. Traditional method of teaching is being practiced throughout the Pakistan at the secondary level. More time, energy and effort is exercised in lecturing the student's and memorizing the concepts. The student's interest and concept formation is totally neglected. The study may prove helpful in bringing positive change in the classroom. The physics teachers at the secondary level can utilize the computer assisted instructions in their lessons. In this way the students interests can be developed in the lesson and the achievement can

- become better due to mentally involvement of the students in the lesson.
2. The second main significance is the clarification of concepts. As through Computer Assisted Instructions the students see and are practically involved in the computer slides, computer programs and the multimedia presentation, these things help in concept formation and clarification of ambiguous science concepts, which can't be covered by simple lecturing or book reading.
  3. Computer Assisted Instructions are given due importance in the foreign countries and work has been done in it, but in Pakistan unfortunately due to lack of resources and expertise for the use of computer in classrooms, there is a lack of research in this field (Iqbal, 1999). Therefore this study is a unique type of effort in Pakistan and will bring a new positive change in Pakistani schools if implemented.
  4. Findings of the study may prove helpful to the teachers training institutions. The prospective teachers may be given practice in using computers for teaching in their classrooms with other traditional methods of teaching and this may bring a positive change, and may be popularized as an innovative technique in our country (Siddiqui, 2005).
  5. Findings of the study may bring a positive change in the teachings of our science teachers at secondary level. In our country science is also taught with lecture and book method, which is a dilemma of our country. Although science demands for the problem solving, discovery approach and practical work in the classroom, but this is either totally rejected or not done with such zeal and devotion. This research will float the findings that may prove fruitful for science teachers and may mold their teaching techniques and approaches towards a positive direction (Waheed and Rasheed, 1993).

#### **LIMITATIONS OF THE STUDY**

Due to non availability of standardized achievement tests in the subject of physics at secondary level, the researcher himself developed and validated the academic achievement test (pre-test and post-test) to measure the

academic achievement before and after the experiment. There was also no such interest inventory available to find the interest of the students in two different methods of teaching. Therefore the researcher himself developed the interest inventory with the help of the experts from the different departments of the Gomal University, Dera Ismail Khan.

### **DELIMITATIONS OF THE STUDY**

The study was delimited to:

1. The only University Wensam College, Dera Ismail Khan.
2. Only 9<sup>th</sup> Grade students of University Wensam College.
3. Only the subject of Physics at the Secondary level.
4. Only 26 topics of the 9<sup>th</sup> grade physics.

### **HYPOTHESIS OF THE STUDY**

The research problem was to find the comparative effectiveness of teaching physics with the help of Computer Assisted Instructions method and traditional Lecture method and to see which of these two methods had a positive effect on the academic achievement and interest of the secondary school students in Dera Ismail Khan. In order to investigate the

problem the following null hypothesis were tested.

1. There is no significant difference of overall academic achievement of the two groups taught physics by traditional lecture method and those taught by Computer Assisted Instructions.
2. There is no significant difference in the interest score of secondary school students which are taught physics with the help of lecture method and by using the Computer assisted Instruction method.
3. There is no positive effect of the Computer Assisted Instruction method of teaching physics on the academic achievement and interests of the secondary school students.

### **METHOD OF RESEARCH**

**POPULATION:** All the 9<sup>th</sup> grade students of Government High and Higher Secondary Schools of Dera Ismail Khan City were taken as the population of the study.

**SAMPLE:** In this experimental study, only one school University Wensam College, Dera Ismail Khan was selected as the sample out of the six Government High and Higher Secondary Schools of the Dera Ismail

Khan city. The school was selected on random basis using draw method technique. 80 students of the two 9<sup>th</sup> grade sections (C and D) were selected as the sample of the study. These 80 students were divided into two groups on the basis of pre-test and matched pair sampling. One group was randomly assigned as the experimental group and the other as control group.

Similarly two teachers similar in qualification, teaching experience, age, socio-economic status and their reputation at the school were selected for the teaching purpose. One teacher was randomly assigned as the experimental group teacher and the other as the control group teacher.

#### **INSTRUMENT:**

1. Teacher made objective type achievement test (pre-test) to divide the sample into two equal groups.
2. Teacher made achievement test (post-test) to check the achievement of both the experimental and control groups after experiment.
3. Text book of physics 9<sup>th</sup> class.
4. Multimedia presentations and Computer programs of 26 lessons of physics text book of 9<sup>th</sup> class.
5. Observation Schedule.
6. Interest inventory.

#### **ACHIEVEMENT TESTS**

Two achievement tests( pre-test and post-test) were developed in the subject of physics of 9<sup>th</sup> class. Pre-achievement

test was used to divide the sample into two equal groups on the basis of paired matching of the scores. Post-achievement test on the other hand was used to test the achievement of both the groups (experimental and control group) after the experiment.

**Pre-test:** Pre-test was developed in the subject of Physics. This test consists of True/False, Multiple Choice, and fills in the Blanks questions. There were total 20 test items and the each item was assigned one mark i.e. total 20 marks of the test. Time for the test was 40 minutes.

**Post-test:** Post-test was developed in the subject of physics. Post-test was to check the academic achievement of the two groups after experiment. Post-test consist of total nine questions with (a) and (b) parts. This test was 100 marks test and the time of the test was 3.0 Hours.

Post-test was developed keeping in view the different modes of CAI i.e. problem solving, discovery learning, drill and practice and tutorials. These different modes of CAI were checked in the different questions and their subparts. In developing the post-test in different modes of CAI, Allied Material on

computer in Education proved very helpful.

In the start there were about 25% more items in the test which were dropped by the subject expert's view and by pilot testing the items on the same grade level.

**OBSERVATION SCHEDULE.**

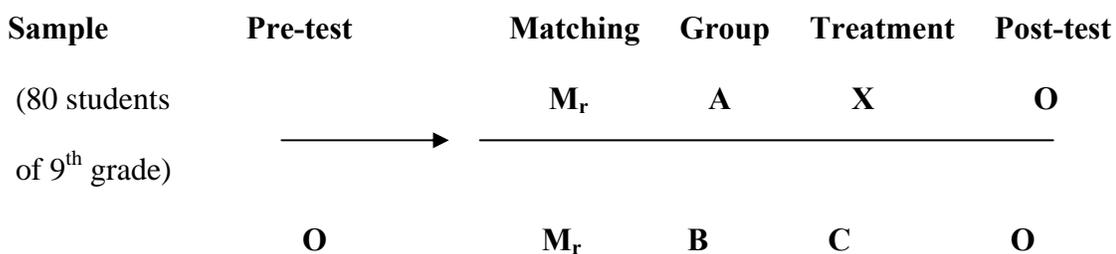
Observation schedule for determining the proportionate amount of time taken by the students, students + teacher and teacher in each group

**INTEREST INVENTORY:** The main objective of the interest inventory was to check the interest of the students towards the teaching learning process in two different methods of teaching i.e. CAI and traditional lecture method.

**Preparation:** As there was no such interest inventory already available, so the researcher himself developed the interest inventory by taking help from the work of the Likert. The researcher also took help from the internet for developing interest inventory.

**Validation:** At the initial stage the interest inventory had total 48 items. This interest inventory was put to the experts from the different departments of the Gomal University Dera Ismail Khan for experts view to check whether these items can be included in the said interest inventory or not. A five point scale Strongly Agree, Agree, Undecided, Disagree, and Strongly Disagree was used for the validity purpose. About 8 items were discarded and the remaining 40 items left as a result of experts view in the final version of the interest inventory.

**DESIGN OF THE STUDY:** Pre-test Post-test equivalent group design using matched subjects, was used for this experimental study, which is described as under:



## **METHODOLOGY**

### **ADMINISTRATION OF PRE-TEST**

The pre-test was given to the sample of 80 students of 9<sup>th</sup> grade. The all other conditions of time, weather, like and dislike were same for all the students. Instructions for the test solving were given equally for all the students.

### **PRE-TEST SCORING AND GROUPING**

After administration of the pre-test, the test was marked. Each true item of the test was given one mark. After marking the tests of all the 80 students, the grouping of the students was being made. Grouping was in such a way that the students having equal marks were paired, and in this way the whole sample was divided into pairs of two. After grouping, one student from each pair was assigned to the experimental group and other to the control group on random basis, so that both the groups are equal before the treatment (experiment).

**TREATMENT:** After forming two equivalent groups, the two groups were taught by the two teachers of the school having same qualification, teaching experience, age and reputation at the school. Both the groups were given the same experiences except for the method of

teaching. The experimental group was taught by the Computer Assisted Instruction method and the control group was taught by the traditional Lecture method. Duration of the teaching was one month with one period on daily basis in both the groups.

### **ADMINISTRATION AND SCORING OF POST-TEST**

At the end of the treatment, the post test was being given to the students of both the experimental and control groups. Instructions, time, environment and all other factors of the test administration were kept same for both the groups, so that the internal or external factors may not effect the academic achievement. After collecting the answer scripts, theses were marked and the scores were tabulated for the purpose of analysis.

### **ADMINISTRATION AND SCORING OF INTEREST INVENTORY:**

The final version of the interest inventory was administered to the students of both control and experimental groups, to check their interest in two different methods of teaching. Also five point scale was used for filling up the interest inventory. The guidelines for the students were clear.

After administration of the interest inventory, the data was tabulated for the purpose of analysis. The average of the scores in the interest inventory was calculated using the formula,

$$\text{AVERAGE SCORE} = \frac{\text{SA} \times 5 + \text{A} \times 4 + \text{U} \times 3 + \text{D} \times 2 + \text{SD} \times 1}{\text{Total No of responses}}$$

**ANALYSIS OF DATA OF**

**ACHIEVEMENT TESTS:** Data was arranged in tables and was analyzed by using the computer programs Ms-Excel, Statistica and SPSS.

**ACHIEVEMENT TEST**

The data of the achievement tests was analyzed on computer by using the mean, standard deviation, variance and the test of significance of the difference between the means of the two independent groups (z-test). Significance of the difference between mean was seen at 0.05 as the criteria for the rejection of null hypothesis.

Findings, conclusions and recommendations were made on the basis of analysis of data.

**PRESENTATION AND ANALYSIS OF DATA**

**Table1: Showing the mean pre-test, post-test score of the control and experimental group**

Variable	Total obtained score	Number of students	Mean	SD	Variance	Computed Z-value
CG	698	40	17.3799	1.568	2.458974	0.0838
EG	697	40	17.3468	1.646	2.712179	

**Table2: Showing the mean post-test score (Overall Academic Achievement) of the control and experimental group**

Variable	Total obtained score	Number of students	Mean	SD	Variance	Computed Z-value
CG	2080	40	47.370	20.694	428.2564	4.580815
EG	2683	40	63.212	20.280	411.3019	

**Table3: Showing the proportionate amount of time taken by the teacher, teacher+students, and the students in the experimental and control groups.**

Group	Days	Total Time	Time taken by Teacher		Time taken by Teacher+student		Time taken by Student	
			Hours	%age	Hours	%age	Hours	%age
Experimental	20	13.33 Hrs	3.0	22.5	3.33	24.9	7.0	52.6
			5.0	37.5	4.33	32.4	4.0	30.1
Control	20	13.33 Hrs	5.0	37.5	4.33	32.4	4.0	30.1

**Table4: Showing the mean score of the control and experimental group On interest inventory**

Variable	Total obtained score	Number of students	Mean	SD	Variance	Computed Z-value
CG	170.55	40	4.21401	0.5467	0.29894	2.075472
EG	178.55	40	4.43916	0.4045	0.16362	

## FINDINGS

1. In the pre-test the mean, standard deviation and the variance of the control and experimental groups are 17.37997, 1.568112, 2.458974 and 17.34682, 1.64687, 2.712179 respectively. The computed z-value of the two independent groups 0.0838 is less than the tabulated value (1.96) at 0.05 level of significance. So the difference between the mean of two groups is not significant at 0.05 level of significance. The not significant z-value shows that both the experimental and control groups were equivalent before starting the experiment.

2. In the post-test the mean, standard deviation and variance of the control and experimental groups are 47.37043, 20.69436, 428.2564 and 63.21231, 20.28058, 411.3019 respectively. The computed z-value 4.580815 of the two independent groups is greater than the tabulated value (1.96) at the 0.05 level of significance. So the difference between the means of the two independent groups is significant at 0.05 level of significance. This also shows that the experimental group performed significantly better than the control

group in overall academic achievement of the students.

3. The percentage of time taken by the teacher, teacher+students and students in the experimental and control groups is 22.5%, 24.9%, 52.6% and 37.5%, 32.4%, 30.15. It indicates that 15% (37.5-22.5) and 7.5% (32.4-24.9) more time is taken by teacher and teacher+students respectively in the control group than the experimental group. Whereas 22.5% (52.6-30.1) more time is taken by the students in the experimental group as compared to the control group.

4. In the interest inventory the mean, standard deviation and variance of the control and experimental groups are 4.21, 0.54, 0.29 and 4.43, 0.40, 0.16 respectively. The computed z-value 2.0754 of the two independent groups is greater than the tabulated value (1.96) at the 0.05 level of significance. So the difference between the means of the two independent groups is significant at 0.05 level of significance. This shows that the experimental group performed significantly better than the control group in interest inventory. Students of the experimental group were more interest in the computer assisted

instructions than the students of the control group using the traditional lecture method.

## CONCLUSIONS

The findings of the study led to the following conclusions.

Teaching “physics” to the 9<sup>th</sup> grade students using the computer assisted instructions has overall positive effect on the academic achievement of students as compared to the traditional lecture method of teaching, so the first null hypothesis is rejected.

There is a positive effect of the Computer Assisted Instruction method of teaching physics on the interests of the secondary school students. The students were more interested in the Computer Assisted Instructions as compared to the traditional lecture method, so the second null hypothesis is rejected.

## RECOMMENDATIONS

Following recommendations are made in the light of the conclusions.

1. The “physics” teachers at secondary level may use the computer assisted instructions method of teaching, in this way they can made their teaching

more effective as compared to the traditional lecture method.

2. The “physics” teachers at secondary level may utilize the computer programs/packages and slides in their daily classes, in this way their teaching becomes more fruitful.

3. The “science” teachers at secondary level may use the computer assisted instructions in the areas of discovery learning to make their teaching effective and result oriented.

4. The “science” teachers at secondary level may use the computer assisted instructions in the areas of tutorials to make their teaching effective and result oriented.

5. Secondary school teachers should not be limited to only text books in science subjects.

6. Secondary school teachers should not be limited to only traditional lecture method in science subjects.

7. The “science” teachers should provide maximum amount of time to the students in daily class period to think upon and clear the science concepts concerning the areas of discovery

learning, problem solving, drill and practice and tutorials.

8. The “physics” teachers may use the computer assisted instructions in their classes to motivate the students and make the lesson more interesting.

9. The bureaus of curriculum and curriculum wing of the ministry of education, may be informed of the results of the study, so that they can improve/modify and revise the courses in the light of the recommendations made by the study.

10. The “science” teachers in the school should be informed about the results of the study, so that they could implement these results in their daily classrooms.

11. The study may be extended to primary and higher secondary level.

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# ECONOMIC IMPORTANCE OF ISLAMIC LAW OF INHERITANCE

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## **ABSTRACT**

The Islamic Law of Inheritance is very important in Islamic economy. Law of inheritance is deeply concerned with family system. The Islamic law of inheritance plays an important role in the economic development. An attempt has been made in this research paper to explain and analyse the Islamic law of inheritance .

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In the different periods of human history different codes of law pertaining to the procurement of property existed. Out of them one was "Taurith" (law of inheritance). Islamic law of inheritance if compared to other parallel systems is more scientific, comprehensive and is exactly in accordance with the principles of nature. (Rehman, 1980)

Islamic law of inheritance is free from all sorts of flaws and is based on strong dogmas, its veracity can be tested from the Holy Quran and the Prophet's traditions (Hadith). Islamic law of inheritance is in vogue for the last fourteen centuries in whole of the Muslim world. It traces its origin from the Holy Quran and the traditions of Holy Prophet (Peace be upon him) and majority of the muslims( Sawad Azam) also endorses its explanation. The foregoing Islamic law of inheritance has

become fortified because it has been being practiced for the last fourteen centuries. Inheritance is that right which Almighty Allah has favored and liked for His creature. It is such a duty' which cannot be altered and this law is binding on the Muslims

Inheritance is not transferable property right, by the means of which property of the deceased are transferred to his/her legal inheritors. (Redman, 1980)

Transfer of property is important for economics and social progress of the society. There are two types of transformation of property in Islam.

1. Voluntary
2. Involuntary

### **1. Voluntary:**

According to voluntary transformation, transfer of property takes place with compensation or without compensation.

Transfer of property without compensation in proper state of health is called share (HIBAH). In case of death things are dealt with according to spirit of the will of the deceased or parted soul. Transfer of property along with all kind is called Bay (Sale) and Uqud (Agreement).

## **2. Involuntary:**

Through involuntary type of transformation of property, properties stands automatically transferred to the heirs. The heirs have no choice. This is involuntary transference of property' is called law of inheritance. (Maudud, 1951).

Thus, inheritance is that transformation of property by the means of which willingness of the owner is no condition. Code of inheritance is available/can be seen in Quranic verse of sura al- Nisa and this has further been elucidated by traditions. (Siddique, 1986).

Almighty Allah has presented the division of property in the shape of law of inheritance which contains several good points. Law of inheritance has deep concern with family system. This law surely grants a continuity and oneness to the family. Islamic law of inheritance,

keeping in view family links and relationship, has tailored out such an approach of division of economic right which is strictly and justly according to the requirement of nature. Family life can be safeguarded against any kind of socio, economic evil/disaster.

Islamic law of inheritance provides solace of mind, peace and tranquility and averts disgruntlement common in human society which grimaces us at every step. Distribution of property among the inheritors has been determined and fixed up by God, so that, to check the dispute among the inheritors.

The Holy Qur'an in Surah An-Nisa says: "Your parents or your children,; you know not which of them is nearer unto you in usefulness. It is an injunction from Allah. Lo! Allah is knower. (Al-Quran, Sura Al- Nisa)

Islamic code of inheritance provides provides financial support and sustenance to many who are helpless, sourceless, widows, worn out by age, men and women, needing sustenance. Contrary to the Islamic law of inheritance if whole of the productive capital namely plants, machines, fields, house and other allied sources of income

generation are put to custody of the government, then government will become the sole proprietor of all means of production. This state monopoly will simply reduce the individuals to mere labour.

It is, therefore, imperative for the economic development of country and the economic freedom of individuals that private institutions of proprietorship must be upheld and maintained. This can only be possible when Islamic law of inheritance is practiced which is in consonance with the natural law. According to the law of inheritance the property of a deceased is split up in several parts. Instead of being concentrated in few hands, property in shares goes to different individual and in this way it smoothen to the economic inequalities and stands in good steady/firm. Islamic law of inheritance wields far reaching influences on the economy on micro as well as on macro level. Economic growth is adversely impeded or affected by concentration of wealth in fewer hands. To check this vicious circle of concentration of wealth, Islam has enunciated the law of Zakat. Similarly, or on the same pattern system

of alms(charities center) giving has been tailored out. In spite of all this if after the death of someone the concentration of wealth exists in any shape, then law of inheritance takes care of it.

The accumulated wealth is distributed among the fixed share holders. (Maudud, 1951)

Kith and Kins of the deceased like sister, brothers and sons. (Rchman 1980) the English term it is dubbed as residuary, other than the aforementioned relation like uncle, aunt etc.

Islamic method of distribution of property is such through which no closed relative is deprived of his/her genuine right. Thus, concentrated wealth gets distributed and foils the adverse and acclamations effects of concentration of wealth and puts the economy on even keel by minimizing the socio economic evils of diverse and grave nature in human society.

Islamic law of inheritance not only puts to end the concentration of wealth in fewer hands, it rather allows the free circulation and mobility of money from hand to hand which eventually raises the ratio of consumption and expenditure. Productive process is toned up,

employment opportunities are increased, per capita income also undergoes a change, all these things inevitably improve the economic system and national dividend gets enlarge. This also ameliorates the economic situation, poverty hunger, adversity and socio economic scourges are eliminated or at least reduced to a large extent. A gradual, palpable a positive and permanent process of healthy development is initiated and the vicious circle of poverty comes to an end.

The grim reality is that jagirdary (Land lord) system fiefdom is largely responsible for giving birth to joint family system and primogeniture. Islamic law of inheritance checks these foregoing trends. Almighty Allah has extended the right of inheritance to a large extent due to which left over material wealth/property can be distributed into many parts and in the this way fiefdom system, jagirdary system automatically reaches its end and frizzles out and also all socio economic ills and scourges are obliterated. (Al Mujanad,1927) With the end of social vicious circle pace of economic development is augmented.

Productive resources are developed and multiply in number and in this way production of material goods and services is enlarged and safely and adequately cater, to the ever growing needs of the society. This is also a fact that large fief holders do not take part in the process of production of goods that is why full-fledged production/production on large scale does not come forth. Acting upon the Islamic law of inheritance when big jagirdar(big land lord) pass through the process of distribution then the new proprietors are likely to emerge and work and till their lands sedulously and production is likely to increase.

Total production is expected to rise and pace of economic development surely accelerated. Employment ratio is bound to rise. More raw materials being available in plethora will help in the establishment of new industrial units increase per capita income and national income will wipe out the differences in the income of the people. If the Islamic Laws are not allowed to play their role in determining the distribution of property and wealth then deplorable state of affairs is created. People, instead of

enjoying self-dependence, are reduced to penury destitution and abject living. This will, in turn sadly affect the economic growth of society.

Islamic law of inheritance enables the deprived people to obtain their legitimate rights and thus they are rendered fit to play their effective role in the development process of the society. Spread of concentration of wealth in few hands, the root cause of all socio economic ills is effectively checked through Islamic law of inheritance and good socio economic set-up comes into being. Free and faultless, clean social security system guarantees the well - being of the people amply. People become docile sympathetic and feel compunction and concern for each other and shun nefarious trends of thinking malice and atrocities of all sorts. They are purged of all these scourges. Through Islamic law of inheritance many deprived and forgotten people receive their genuine rights and this generates their perennial source of income. Propensity to consume is augmented; total quantum of goods and services is increased, in this way new investment is made, which in turn

generates employments opportunities for the masses. This continuous flow of goods and services rise in income, purchasing power of the individuals' paves way to the restoration of collapsing economy and thus sustained economic growth takes place which provides material prosperity uplift and betterment to the society:

### **CONCLUSION**

Islamic law of inheritance is the real shape of transfer of property among the persons having blood relation. Due to this law held up economic development is initiated again. Islam protects the basic economic benefits of individuals which occur to them and Islam also fixes economic responsibilities and rights of people. Resultant effect is equitable distribution of wealth which lends economic stability to the country.

Thus, Islam law of inheritance plays a vital role in the economic development.

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