Research Paper

Education

Study of Workload in Science as Dimension of Psychological Stress Among Science Students

Dr. Narendra Kumar

Assistant Professor Department of Education, S.G.P.G. College, Sarurpurkhurd, Meerut

ABSTRACT

This study attempts to assess the workload in science as dimension of psychological stress among senior secondary science students studying in different types of institutions.. A sample of 631 students was randomly selected from the schools recognized by different boards in Meerut province. They were administered Psychological Stress Scale for Science Students (PSSSS) developed by the researcher himself. Mean, S.D., F-test and t-test were used to analyze the data. Results show that male and female, rural and urban science students did not differ significantly on psychological stress dimension workload in science. However significant difference was observed among the students of diiferent institutions. Highest psychological stress due to worload in science was found in the students of PS and lowest in the students of KV.

KEYWORDS :

Introduction

The present scenario is coming up with technological revolution, web technology and web culture. Naturally it is the achievement of people especially in the field of science besides humanities. It is well considered opinion proven rationally that science is the great potential factor for the development of country. Hence science education in every country occupies a significant emphasis. The very structured knowledge in science education demands good intellect people with scientific attitude and rationale mind. Difficulty in understanding of science experienced by students in general, fear of science and underachievement in science subjects are the common problems due to which students used to suffer. Science also exerts a number of additional demands on students. The science curriculum requires enormous commitment and hard work by students. The intense curriculum may produce stress on science student's life. The school setup, teacher's expectations, infrastructure facilities, modalities of teaching etc. promote the feeling of pressure associated with being in the science stream. Most of the time, science students have complain of dwelling in between their efforts for better achievement and teacher's/ parent's expectations. Even investing time and efforts they find it difficult and get easily stressed. It is being experienced by parents and teachers in schools that science students suffer from psychological stress which influence the achievement.

In the hope of preparing students for their future roles in science, it is important to identify stressful factors that may affect their successful development. One study identified the major academic stressors among college students to be tests, grade competition, time demands, professors and classroom environment, and career and future success (Murphy & Archer, 1996). Misra, et al., (2000) found that academic stress among college students varies across year in school and gender. Most of the studies in different responses to stress have been carried out in dental, medical, nursing, university and college students (Sinha, et al 2000, Lee et al 2002, Kuruppuarachchi, et al 2002, Ellison, 2004, **Polychronopoulou, Argy and Divaris, Kimon 2005,** Hussain, et al 2008, Kumar and Singh 2004, Kaplan, et al 2005, Chapell, et al 2005, Vijayalakshmi and Lavanya 2006, Nicholson 2009, and Hasan 2009). Workoad in science is also the major causal factor of stress among science students. This refers to the stress among science students because of the excessive work that they are required to do in science, which is reflected in the increasing amounts of schoolwork, assignments and practicals. The researcher found that there is no research conducted particularly in Western U.P pertaining to this issue. Therefore, it was decided to conduct a research to examine this particular issue. In the present study, the researcher attempted to study the workload in science as dimension of psychological stress among senior secondary science students.

Objectives

- To study the nature of workload in science as dimension of psychological stress among science students.
- To study the difference between male and female science students on workload in science as dimension of psychological stress.
- To study the difference between rural and urban science students on workload in science as dimension of psychological stress.
- To study the difference among science students of different types of institutions on workload in science as dimension of psychological stress.

Research Methodology
Method

Methods of research are generally determined by the theory of the topic under study, objectives of the study, resources of researchers etc. These considerations have led the investigator to use the descriptive survey method of research for the present study.

Participants

For the present study, science students officially enrolled in 12th standard were taken from the institutions recognized by different boards in Meerut province. Using simple random sampling, 100 senior secondary science students were selected from each type of institutions. Out of 700 science students only 631 students were finally taken because 69 students did not fill the scale properly.

Material and Procedure

To achieve objectives of this study Psychological Stress Scale for Science Students (PSSSS) developed by the researcher was used to measure psychological stress of science students. Each item was followed by five options, namely, 'Always', 'Often', 'Sometimes', 'Rarely', ans 'Never'. Reliability of the scale was determined by split half method and was found 0.96.

Data Analysis Techniques

To study the nature of workload in science as dimension of psychological stress, all the science students (N = 631), mean and standard deviation (S.D.) were calculated. To find out the differences among science students on workload in science as dimension of psychological stress, analysis of variance (ANOVA) was used. In case of significant F-value, t-test was used. Results are presented in the following tables.

Results

After analysis the data, it was observed that the mean, median and mode values of all the 631 science students on psychological stress dimension workload in science were found to be 22.179, 22 and 22 which indicate moderate level of stress due to workload in science.

Table-1

Summary of t-test for difference between male and female science students on workload in science as dimension of psychological stress

Dimensions of Psychological Stress	Male (N = 419)		Female (N = 212)		t-value
	Mean	S. D.	Mean	S. D.	
Workload in Science	22.37	6.82	21.72	6.62	1.13

It is evident from Table - 1 that t-values between the means of male and female science students on psychological stress dimension workload in science was found to be 1.13 which was not significant at 0.05 level of significance. This implies that apparent differences in the means were not true. These were due to chance or sampling error.

Table-2
Summary of t-test for difference between rural and urban science students on workload in science as dimension of psychological stress

Dimensions of Psychological Stress	Rural (N = 218)		Urban (N = 413)		t-value
	Mean	S. D.	Mean	S. D.	
Workload in Science	22.31	6.36	22.07	6.96	0.44

It is evident from Table- 2 that t-values between the means of rural and urban science students on psychological stress dimension workload in science was found to be 0.44 which was not significant at 0.05 level of significance. This implies that apparent differences in the means were not true. These were due to chance or sampling error.

Table - 3
Sums, sum of squares, means and standard deviations of science students of different institutions on psychological stress dimension work load in science

Types of School	N	Sum	Sum of Squares	Mean	S. D.
KV	95	1913	42329	20.14	6.36
JNV	82	1875	47035	22.87	7.17
GIC	90	1905	43651	21.17	6.12
GAS	79	1673	38165	21.18	5.92
PS	98	2439	65167	24.89	6.79
CMS	96	2088	49962	21.75	6.92
AS	91	2084	52032	22.90	6.92

Table - 4
Summary of analysis of variance for difference among science students of different institutions on psychological stress dimension work load in science

Source of Variation	Df	Sum of Squares	Mean Sum of Squares	F
Between	6	1390.06	231.68	5.285**
Within	624	27352.64	43.83	
Total	630	28742.70	** p < 0.01	

Table - 4 indicates that F-value was 5.285, which was significant at 0.01 level. This means that students of different types of institutions differed significantly on psychological stress dimension workload in science.

Table - 5
Summary of t-matrix for difference between science students of different types of institutions for psychological stress dimension work load in science

Types of Schools	KV	JNV	GIC	GAS	PS	CMS	AS
KV	0	2.668**	1.115	1.101	4.988**	1.668	2.823**
JNV		0	1.667	1.616	1.930	1.049	0.033
GIC			0	0.011	3.916**	0.604	1.777
GAS				0	3.804**	0.578	1.721
PS					0	3.173**	1.982*
CMS						0	1.131
AS							0

It is clear from Table - 5 that significant differences were obtained between the students of KV and JNV, KV and PS, KV and AS, GIC and PS, GAS and PS, PS and CMS, PS and AS on psychological stress dimension workload in science. No significant differences were observed between the students of KV and GIC, KV and GAS, KV and CMS, JNV and GIC, JNV and GAS, JNV and PS, JNV and CMS, JNV and AS, GIC and GAS, GIC and CMS, GIC and AS, GAS and CMS, GAS and AS, CMS and AS on psychological stress dimension workload in science. It is also clear from Table - 3 that highest mean on psychological stress dimension workload in science was found for the students of PS and lowest for the students of KV.

Conclusions
The findings of the study indicates that both male and female, rural and urbal science students show equal level of stress due to workload in science. The reasons behind that may be that science students feel stressed due to additional practical and assignments. There has been realization among educationists to attempt to reduce the workload. The Yashpal committee (1993) has focused exclusively on the problem of burden on school children. It has looked at the problem both in terms of the physical load but more importantly in terms of the burden of non-comprehension that they have from the study of science are not being met. Significant difference was observed among the students of diiferent institutions. Highest psychological stress due to worload in science was found in the students of PS and lowest in the students of KV.

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