



## A Study of DASS-21 and The Self-Efficacy Scale on Post-Graduate Students

*Ramesh Chandra Mahato<sup>1</sup>, Dr. Subir Sen<sup>2</sup>, Anasuya Adhikari<sup>3</sup>*

<sup>1</sup>Ph.D. Research Scholar, Department of Education, Sidho-Kanho-Birsha University, Purulia, India

<sup>2</sup>Associate Professor, Department of Education, Sidho-Kanho-Birsha University, Purulia, India

<sup>3</sup>Ph.D. Research Scholar, Department of Education, Sidho-Kanho-Birsha University, Purulia, India

Mail: [anasuyajpg@gmail.com](mailto:anasuyajpg@gmail.com)

### ABSTRACT

A sensation of worry, dread, and unease is known as anxiety. Stress is characterised as a condition of anxiety or mental tension brought on by a challenging circumstance. Stress is a normal human reaction that motivates us to deal with problems and dangers in our lives. Everyone goes through periods of stress. The most frequent reason for clinic visits has been depression. The present work deals with a correlational study on the Dichotomous variables: Male and Female and Independent Variables: Anxiety, Depression, Stress, General Self-efficacy, Specific Self-efficacy using the DASS-21 and Self-Efficacy Scale on the post-graduate students. The findings of the study reveals that all the aforesaid variables are related, at least for the post-graduate students.

**Keywords:** Anxiety, Depression, Stress, General Self-Efficacy, Specific Self-Efficacy, Correlation

### Introduction

According to WHO predictions, depression will overtake cardiovascular disease as the second most common cause of death in the world in next ten years. Currently, one in five women and twelve men worldwide suffer from depression. The most frequent reason for clinic visits has been depression, despite the general public's misconception that all psychiatric issues are depression. Additionally, the Covid-19 times have noted an increase in anxiety and despair (Gayen and Sen, 2021) among students of different spheres (Sen et al. 2021). Post-graduate students who attend universities must commit their full time and shoulder all of the associated responsibilities (Mahato and Sen, 2021) regarding academic tasks (Ansary et al. 2022). Long study sessions, unfavourable learning conditions, sleep loss, and circumstances that interfere with daily living are frequent at this time. Additionally, these elements are in charge of a person's capacity for social adjustment (Adhikari, 2022; Halder et al, 2022), social relationship (Saha and Adhikari, 2021) and also reflects in social participations (Adhikari & Saha, 2021).

These qualities, coupled with a dearth of elements that enhance quality of life, can raise stress levels, which can harm students' physical, mental, and emotional well-being and impair their academic performance. In contrast to specific self-efficacy, which is limited to the work at hand, general self-efficacy (Mahato and Sen, 2021) is the conviction that one is capable of managing a wide range of stressful or demanding expectations. Numerous studies that demonstrate the relationship between the variables have employed correlation. A statistical technique called a correlation is used to ascertain whether there is a relationship between two variables. This technique examines indirect connections to identify the elements most closely related to a particular knowledge or mentality. A statistical technique for determining how closely two variables are related to one another is correlation analysis. Here are some examples of how this statistical technique has been applied in academic research over the previous ten years (Sutradhar et al. 2023). Another important aspect in the field of educational research is Mahalanobis distance which is used in the similar manner. Several studies have already been done using Mahalanobis distance in the field of educational research to measure distance or divergence of different variables, such as Adhikari (2023), Mohanta et al. (2023a), Mohanta et al.(2023b), Sen et al. (2023), Ahmed et al. (2022a), Ahmed et al. (2022b), Ahmed et al. (2021), Gorain et al. (2021), Mahato and Sen (2021), Ahmed et al. (2020), Sen and Pal (2020) etc. Cluster analysis is another important aspect in the field of educational research. Several studies have been observed in educational research using cluster analysis, such as Gorain et al. (2022), Mohanta et al. (2023), Saha, Sen and Adhikari (2021), Sen et al. (2023), Adhikari et al. (2023) etc. Two-step cluster analysis is a technique that can be applied to both categorical and continuous variables when there are categorical variables with three or more categories. The number of clusters can either be predetermined or determined by the algorithm of the two-step cluster analysis. The approach grows increasingly accurate as the number of subclusters increases (Adhikari et al. 2023; Saha et al. 2021; Gorain et al. 2022; Mohanta et al.2023; Sen et al. 2023).

## Literature Review

Saha (2012) while studying 100 randomly chosen secondary pupils from Birbhum District in West Bengal, found that creativity and socioeconomic position are positively correlated. Saha (2013) selected randomly 300 secondary students of Birbhum District in West Bengal. They found that creativity is positively co-related with environmental awareness. Naik, Dutta and Sutradhar (2015) found the negative relationship between mental health and Facebook addiction of 1<sup>st</sup> year engineering students. Kundu, Saha and Mondal (2015) found that there is significant relationship between social intelligence and adjustment of U.G. level students of different colleges under the Sidho-Kanho-Birsha University, Purulia.

Kar, Saha and Mondal (2016) investigated randomly and selected 302 samples in Purulia, India. They found that Emotional Intelligence affects home, school and peer adjustment through Pearson coefficient correlation. Karmakar et al. (2016) took up a study on randomly 97 female and 112 male students from five secondary schools in Purulia district and revealed significant relationship between IQ and height. They also found low significant relationship between IQ and weight; with no significant relationship between IQ and BMI. Mondal et al. (2018) found that neuroticism is highly correlated with internet affinity, whereas the other four personality factors are either negatively correlated with internet affinity or are not correlated at all, and that males have a higher internet affinity than their female counterparts. Gorain et al. (2018) have found that while there is no discernible difference in internet usage between humanities and science graduate students, high internet users are more socially isolated than ordinary and low internet users. Internet use and social isolation are found to be positively correlated, with a Pearson coefficient of correlation of 0.326.

Gayen and Sen (2021) have discovered a significant link between depression and anxiety in female students, stress and depression in female students, anxiety and depression in students who have depression, anxiety and education department in students who have other departments, anxiety and depression in students who are in their second semester, and depression and anxiety in students who are in their fourth semester. Nothing else demonstrates any other important connections besides these. Kar and Saha (2021) revealed significant relationship between Emotional Intelligence and Leadership style of undergraduate students of West Bengal. Kar and Saha (2021) found significant relationship between Adjustment Ability and Leadership style of undergraduate students of West Bengal. Sutradhar and Sen (2022) did a study on B.Ed. students in West Bengal's Birbhum area and discovered a strong correlation between study habits and emotional maturity. The substantial link between male and female, private and govt. trainees, and rural, was also discovered for the same factors. However, there was no discernible association for urban trainees.

Sutradhar and Sen (2022) have not found a significant relationship between emotional maturity and academic achievement of B.Ed. trainees in their study on B.Ed. trainees. Gorain et al. (2022) have investigated correlations among Internet Dependency, Social Isolation and five factors of Personality on science and arts streams and found positive relationship between Internet Dependency and Social Isolation. Mahato and Sen (2023) investigated the relationship among three variables Contexts Knowledge (CK1), Technological Pedagogical Content Knowledge (TPCK) and Attitude towards Creative Teaching (ACT) considering two variables at a time and found significant relationship in most of the cases. Mahato, Gayen and Mahato (2023a) indicated that there is no correlation between undergraduate students in the Purulia area of West Bengal's self-efficacy and m-learning. Additionally, it showed that self-efficacy and mobile learning are unaffected by gender or place of residence. Mahato, Gayen and Mahato (2023b) have found significant relationship of internet addiction between boys and girls, but no difference has been found in academic resilience. Locality has no discernible influence on either academic toughness or internet addiction. Mahato, Gayen and Mahato (2023c) have shown a strong correlation between internet addiction and cognitive dysfunction among students in West Bengal's higher secondary Purulia district. However, there is not any conclusive reports of gender, area, or stream differences in cognitive impairment and internet addiction.

### Variables:

- (i) **Dichotomous variables:** Male and Female
- (ii) **Independent Variables-** Anxiety, Depression. Stress, General Self-efficacy, Specific Self-efficacy.

### Objectives:

Objectives of this research work is to study the correlation between any two variables for male and female postgraduate students are given below-

- (a) To study the relationship among Anxiety, Depression. Stress, General Self-efficacy, Specific Self-efficacy of postgraduate male students.
- (b) To study the relationship among Anxiety, Depression. Stress, General Self-efficacy, Specific Self-efficacy of postgraduate female students.

### Hypotheses:

The researchers construct the following hypotheses according to formation of above two main objectives-

**H<sub>01</sub>:** There is no significant relation among Anxiety, Depression. Stress, General Self-efficacy and Specific Self-efficacy of Postgraduate Male students.

The above hypothesis H<sub>01</sub> may divided into the following sub-hypotheses-

**H<sub>01a</sub>:** There is no significant relation between anxiety and stress for the male students of postgraduate.

**H<sub>01b</sub>:** There is no significant relation between anxiety and depression for the male students of postgraduate.

**H<sub>01c</sub>:** There is no significant relation between anxiety and general self-efficacy for the male students of postgraduate.

**H<sub>01d</sub>:** There is no significant relation between anxiety and specific self-efficacy for the male students of postgraduate.

**H<sub>01e</sub>:** There is no significant relation between stress and depression for the male students of postgraduate.

**H<sub>01f</sub>:** There is no significant relation between stress and general self-efficacy for the male students of postgraduate.

**H<sub>01g</sub>:** There is no significant relation between stress and specific self-efficacy for the male students of postgraduate.

**H<sub>01h</sub>:** There is no significant relation between depression and general self-efficacy for the male students of postgraduate.

**H<sub>01i</sub>:** There is no significant relation between depression and specific self-efficacy for the male students of postgraduate.

**H<sub>01j</sub>:** There is no significant relation between general self-efficacy and specific self-efficacy for the male students of postgraduate.

**H<sub>02</sub>:** There is no significant relation among Anxiety, Depression, Stress, General Self-efficacy and Specific Self-efficacy of Postgraduate **Female** students.

The above hypothesis H<sub>02</sub> may divided into the following sub-hypotheses:

**H<sub>02a</sub>:** There is no significant relation between anxiety and stress for the female students of postgraduate.

**H<sub>02b</sub>:** There is no significant relation between anxiety and depression for the female students of postgraduate.

**H<sub>02c</sub>:** There is no significant relation between anxiety and general self-efficacy for the female students of postgraduate.

**H<sub>02d</sub>:** There is no significant relation between anxiety and specific self-efficacy for the female students of postgraduate.

**H<sub>02e</sub>:** There is no significant relation between stress and depression for the female students of postgraduate.

**H<sub>02f</sub>:** There is no significant relation between stress and general self-efficacy for the female students of postgraduate.

**H<sub>02g</sub>:** There is no significant relation between stress and specific self-efficacy for the female students of postgraduate.

**H<sub>02h</sub>:** There is no significant relation between depression and general self-efficacy for the female students of postgraduate.

**H<sub>02i</sub>:** There is no significant relation between depression and specific self-efficacy for the female students of postgraduate.

**H<sub>02j</sub>:** There is no significant relation between general self-efficacy and specific self-efficacy for the female students of postgraduate.

## Methodology

**Method:** The method used for this study is descriptive survey type research.

**Population:** The population for this research work is the post-graduate students of Sidho-Kanho-Birsha University, Purulia, West Bengal, India, as the population.

**Sample & Sampling Technique:** To carry out this research work, the researchers have used random sampling technique. For doing this, 500 post-graduate students of Sidho-Kanho-Birsha University from different departments were taken as the sample for this present study.

**Scale Used:** Researchers have used Depression Anxiety & Stress Scales (DASS-21) by Lovibond and Lovibond (1995) and The Self-Efficacy Scale by Sherer et al. (1982) for the collection of data.

**Statistics Used:** The researchers have used Pearson product moment method to calculate the coefficient of correlation.

## Results and Discussions:

Descriptive Statistics			
	Mean	Std. Deviation	N
ANXIETY	21.93	5.902	249
STRESS	20.75	5.227	249
DEPRESSION	17.59	7.434	249
GENERAL SELF-EFFICACY	145.60	30.146	249
SPECIAL SELF-EFFICACY	45.00	9.781	249

Table 1: *Descriptive Statistics for Anxiety, Depression, Stress, General Self-efficacy and Specific Self-efficacy of Postgraduate Male students*

The above table shows that the mean values, standard deviation and number of samples for Anxiety, Depression, Stress, General Self-efficacy (GSE) and Specific Self-efficacy (SSE) of Postgraduate **Male** students.

## Correlations

		Anxiety	Stress	Depression	GSE	SSE
Anxiety	Pearson Correlation	1	.014	.209**	.042	-.054
	Sig. (2-tailed)		.825	.001	.514	.394
	N	249	249	249	249	249
Stress	Pearson Correlation	.014	1	.035	.225**	.094
	Sig. (2-tailed)	.825		.586	.000	.138
	N	249	249	249	249	249
Depression	Pearson Correlation	.209**	.035	1	-.169**	-.215**
	Sig. (2-tailed)	.001	.586		.007	.001
	N	249	249	249	249	249
GSE	Pearson Correlation	.042	.225**	-.169**	1	.142*
	Sig. (2-tailed)	.514	.000	.007		.025
	N	249	249	249	249	249
SSE	Pearson Correlation	-.054	.094	-.215**	.142*	1
	Sig. (2-tailed)	.394	.138	.001	.025	
	N	249	249	249	249	249
** . Correlation is significant at the 0.01 level (2-tailed).						
* . Correlation is significant at the 0.05 level (2-tailed).						

Table 2: Correlation among Anxiety, Depression, Stress, General Self-efficacy and Specific Self-efficacy of Postgraduate Male students.

Table 2 shows that, there are five variables with number of relationship among the variables are  $\chi^2 = 10$ .

It is observed in Table 2 that anxiety is significantly correlated with depression at .01 level of significance, but it is not significantly correlated to other variables such as stress, general self-efficacy, and specific self-efficacy. Hence, the sub-hypothesis **H<sub>01b</sub>**, “There is no significant relation between anxiety and depression for male postgraduate students,” is rejected. However, the other three sub-hypotheses, **H<sub>01a</sub>**, **H<sub>01c</sub>**, and **H<sub>01d</sub>**, are accepted.

Table 2 also shows that stress is significantly correlated with general self-efficacy at .01 level of significance, but it is not significantly correlated to the other two variables, depression and specific self-efficacy. Hence, the sub-hypothesis **H<sub>01f</sub>**, “There is no significant relation between stress and general self-efficacy for male postgraduate students,” is rejected. However, the other two sub-hypotheses, **H<sub>01e</sub>** and **H<sub>01g</sub>**, are accepted.

Again, table 2 shows that depression is significantly correlated with general self-efficacy and specific self-efficacy at .01 level of significance, also general self-efficacy is significantly correlated with specific self-efficacy at .05 level of significance. Hence, the sub-hypotheses **H<sub>01h</sub>**, **H<sub>01i</sub>** and **H<sub>01j</sub>** are rejected.

Therefore, the researchers finally conclude that the sub-hypothesis **H<sub>01a</sub>**, **H<sub>01c</sub>**, **H<sub>01d</sub>**, **H<sub>01e</sub>** and **H<sub>01g</sub>** are accepted however, **H<sub>01b</sub>**, **H<sub>01f</sub>**, **H<sub>01h</sub>**, **H<sub>01i</sub>** and **H<sub>01j</sub>** are rejected. Hence the null hypothesis **H<sub>01</sub>**, “There is no significant relation among Anxiety, Depression, Stress, General Self-efficacy and Specific Self-efficacy of Postgraduate Male students” is partially accepted.

Descriptive Statistics			
	Mean	Std. Deviation	N
ANXIETY	20.97	6.463	251
STRESS	20.40	5.011	251
DEPRESSION	18.29	7.750	251
GENERAL SELF-EFFICACY	159.27	39.421	251
SPECIAL SELF-EFFICACY	44.72	13.411	251

Table 3: Descriptive Statistics for Anxiety, Depression, Stress, General Self-efficacy and Specific Self-efficacy of Postgraduate Female students

Table 3 shows that the mean values, standard deviation and number of sample for Anxiety, Depression, Stress, General Self-efficacy (GSE) and Specific Self-efficacy (SSE) of Postgraduate Female students.

Correlations						
		Anxiety	Stress	Depression	GSE	SSE
Anxiety	Pearson Correlation	1	.214**	.454**	-.147*	-.212**
	Sig. (2-tailed)		.001	.000	.020	.001
	N	251	251	251	251	251
Stress	Pearson Correlation	.214**	1	.289**	-.191**	.125*
	Sig. (2-tailed)	.001		.000	.002	.049
	N	251	251	251	251	251
Depression	Pearson Correlation	.454**	.289**	1	-.106	-.205**
	Sig. (2-tailed)	.000	.000		.094	.001

	N	251	251	251	251	251
GSE	Pearson Correlation	-.147*	-.191**	-.106	1	.284**
	Sig. (2-tailed)	.020	.002	.094		.000
	N	251	251	251	251	251
SSE	Pearson Correlation	-.212**	.125*	-.205**	.284**	1
	Sig. (2-tailed)	.001	.049	.001	.000	
	N	251	251	251	251	251
**. Correlation is significant at the 0.01 level (2-tailed).						
*. Correlation is significant at the 0.05 level (2-tailed).						

Table 4: Correlation among Anxiety, Depression, Stress, General Self-efficacy and Specific Self-efficacy of Postgraduate **Female** students.

Table 4 shows that, there are five variables with number of relationships among the variables are  ${}^5C_2 = 10$  of Postgraduate **Female** students.

It is observed in Table 4 that anxiety is significantly correlated with depression, stress, and specific self-efficacy at .01 level of significance and it is significantly correlated to general self-efficacy at .05 level of significance. Hence, the sub-hypotheses **H<sub>02a</sub>, H<sub>02b</sub>, H<sub>02c</sub>, and H<sub>02d</sub> are rejected**.

Table 4 also shows that stress is significantly correlated with depression and general self-efficacy at .01 level of significance. It is also significantly related to specific self-efficacy at .05 level of significance. Hence, the sub- hypotheses **H<sub>02e</sub>, H<sub>02f</sub> and H<sub>02g</sub> are rejected**.

Again, table 4 shows that depression is significantly correlated with specific self-efficacy at .01 level of significance. However, it is not significantly correlated to general self-efficacy. In addition, general self-efficacy is significantly related to specific self-efficacy at .01 level of significance. Hence, the sub-hypotheses **H<sub>02i</sub> and H<sub>02j</sub> are rejected, but sub-hypothesis H<sub>02h</sub> is accepted**.

Therefore, the researchers finally conclude that the sub-hypotheses **H<sub>02a</sub>, H<sub>02b</sub>, H<sub>02c</sub>, H<sub>02d</sub>, H<sub>02e</sub>, H<sub>02f</sub>, H<sub>02g</sub>, H<sub>02i</sub>, H<sub>02j</sub> are rejected however, H<sub>02h</sub> is accepted**.

Hence the null hypothesis **H<sub>02</sub>**, “There is no significant relation among Anxiety, Depression, Stress, General Self-efficacy and Specific Self-efficacy of Postgraduate **Female** students” is rejected. The alternative hypothesis is “There is significant relation among Anxiety, Depression, Stress, General Self-efficacy and Specific Self-efficacy of Postgraduate **Female** students” is accepted.

## Conclusion

Relationship between different variables Anxiety, Depression, Stress, General Self-efficacy and Specific Self-efficacy are studied with respect to gender (male and female). For male candidates, half of the relationships are significant but the remaining are insignificant. As a result, we cannot conclude that Hypothesis “There is no significant relation among Anxiety, Depression, Stress, General Self-efficacy and Specific Self-efficacy of Postgraduate **male** students” is rejected. For female candidates, all the sub-hypotheses except **H<sub>02h</sub>** are rejected. As a result, **H<sub>02</sub>** is rejected. To sum up, we can say that all the aforesaid variables are related, at least for the post-graduate students.

## References:

- Adhikari, A. & Saha, B. (2021). Women Participations in Education and Politics: A Twenty First Century Scenario. *International Journal of Research in Social Sciences*, 11(4), 68-74.
- Adhikari, A. (2022). Socio-Educational Perspectives: A Study on Human Adjustment. *EPRA International Journal of Research & Development (IJRD)*, 8(1), 97-101.
- Adhikari, A. (2023). Application of Mahalanobis distance in education and educational psychology: A review. *Innovare Journal of Education*, 11(4), In Press.
- Adhikari, A., Gayen, P., Mahato, R. C., Pal, I. & Sen, S. (2023). Multi-dimensional data analysis in education: Accumulation and comparison among variables. *International Journal of Research Publication and Reviews*, 4(5), 2243-2245.
- Adhikari, A., Gayen, P., Sutradhar, A. & Sen, S. (2023). A Measure for Measure: Statistics in Education. *International Journal of Research Publication and Reviews*, 4(5), 4239-4243.
- Ahmed, E. A., Banerjee, M., Sen, S. & Chatterjee, P. (2021). Comparison of achievement of higher secondary subjects among tribal and non-tribal students of Bodoland Territorial Region, Assam, India using Mahalanobis distance. *Journal of Calcutta Mathematical Society*, 17(1) 61–66.
- Ahmed, E. A., Banerjee, M., Sen, S. & Chatterjee, P. (2020). Application of Mahalanobis  $\Delta_2$  on achievement tests on mathematics: A study on higher secondary level students. *Indian Journal of Psychology and Education*, 10(1), 36-40.
- Ahmed, E. A., Karim, M. R., Banerjee, M. & Sen, S. (2022a). Comparison of scholastic attainment in English and Math amongst other studies at the higher secondary level: A study using Mahalanobis distance. *Kuramve Uygulamada Eğitim Yönetimi Educational Administration: Theory and Practice*, 28(4), 1-13.

9. Ahmed, E. A., Karim, M. R., Banerjee, M., Sen, S., Chatterjee, P. & Mandal, G. (2022b). A comparative study on academic achievement of Mathematics and English with other subjects of secondary level in BTR of Assam, India, using Mahalanobis Distance. *Education Research International*, 1-10. <https://doi.org/10.1155/2022/3669065>
10. Ansary, A., Ansary, S., Adhikari, A. & Sen, S. (2023). Clustering Technique for Analyzing Attitude towards Value-oriented Education among Undergraduate Students. *International Journal of Research Publication and Reviews*. 4(5). 5576-5584.
11. Ansary, S., Ansary, K. & Adhikari, A. (2022). Attitude towards Social Adjustment among the Undergraduate Students of Purulia District. *EPRA International Journal of Research and Development (IJRD)*. 7(12), 21-26.
12. Gayen, P. & Sen, S. (2021). Prevalence of anxiety, depression and stress among postgraduate students during COVID-19 situation: A study on postgraduate students. *International Journal for Innovative Research in Multidisciplinary Field*, 7(9), 172- 178.
13. Gayen, P., Sen, S. and Adhikari, A. (2023). Relationship between Organizational Climate and Institutional Commitment of Secondary School Teachers of West Bengal. *International Journal of Scientific Research and Engineering Development*. 6(3). 426-435.
14. Gorain, S. C., Adhikari, A., Saha, B. & Sen, S. (2021). A study on Internet Dependency, Social Isolation and Personality using Mahalanobis Distance. *EPRA International Journal of Research and Development (IJRD)*, 6(9) 179 – 184.
15. Gorain, S. C., Mondal, A., Ansary, K. & Saha, B. (2018). Social isolation in relation to internet usage and stream of study of under graduate students. *American Journal of Educational Research*, 6(4), 361-364.
16. Gorain, S. C., Saha, B., Maji, S. & Sen, S. (2022). A study on relationship and cluster analysis among internet dependency, social isolation and personality. *International Journal of Research Publication and Reviews*, 3(1), 884-888.
17. Haldar, P., Roy, S., Gorain, S.C., Adhikari, A. & Saha, B. (2022). Measuring Attitude towards Sustainable Development among Trainee Teachers in Purulia District of West Bengal. *American Journal of Educational Research*. 10(12), 682-696.
18. Kar, D. & Saha, B. (2021). A study of relationship between leadership style and emotional intelligence of undergraduate students. *International Journal of Research and Analytical Reviews*, 8(2), 13-15.
19. Kar, D. & Saha, B. (2021). Leadership style and Adjustment Ability among Undergraduate Students: A Correlational Study. *International Journal of Creative Research Thoughts*, 9(9), d148-d151.
20. Kar, D., Saha, B., & Mondal, B. C. (2016). Emotional Intelligence and Adjustment Ability among Higher Secondary School Students: A correlational study. *American Journal of Social Sciences*, 4(4), 34-37.
21. Karmakar, T., Paul, A., Mondal, A. & Saha, B. (2016). Intelligence in relation to Height and Weight among Secondary School Students. *American Journal of Educational Research*, 4(16), 1145-1148.
22. Kundu, M., Saha, B. & Mondal, B. C. (2015). Adjustment of undergraduate students in relation to their Social Intelligence. *American Journal of Educational Research*, 3(11), 1398-1401.
23. Lovibond, S. H. & Lovibond, P. F. (1995). *Manual for the depression anxiety & stress scales*. (2nd Ed.) Sydney: Psychology Foundation. Retrieved from <https://maic.qld.gov.au/wp-content/uploads/2016/07/DASS-21.pdf>
24. Mahato, A., Gayen, P. & Mahato, R. (2023c). Relationship between Cognitive Failure and Internet Addiction of Higher Secondary Students of Purulia District of West Bengal: A Study. *Innovare Journal of Education*, 11(3), 15-19.
25. Mahato, A., Gayen, P. & Mahato, R. C. (2023b). Relationship between academic resilience and internet addiction of undergraduate students of Purulia district of West Bengal: A study. *EPRA International Journal of Multidisciplinary Research*, 9(3), 103-106.
26. Mahato, D., Gayen, P. & Mahato, R. C. (2023b). Relationship between academic resilience and internet addiction of undergraduate students of Purulia district of West Bengal: A study. *EPRA International Journal of Multidisciplinary Research (IJMR)*, 9(3), 103-106.
27. Mahato, M., Gayen, P. & Mahato, R. C. (2023a). Relationship between self-efficacy and m-learning of undergraduate students of Purulia district of West Bengal. *International Journal of Research Publication and Reviews*, 4(4), 3219-3222.
28. Mahato, R. C. & Sen, S. (2021). Application of Mahalanobis Distance to Determine the Dynamical Nature of Academic Stress, Self- efficacy in Mathematics and Anxiety in Mathematics. *International Journal of Advances in Engineering and Management (IJAEM)*. 3(5). 1398-1401.
29. Mahato, R. C. & Sen, S. (2023). Relationship among Contexts Knowledge (CK1), technological pedagogical content knowledge (TPCK) and attitude towards creative teaching for pre-service trainee teachers: A study on Mathematics method subject. *International Journal of Creative Research Thoughts*, 11(4), d301-d314.
30. Mohanta, R., Adhikari, A., Pal, I., & Sen, S. (2023). Introspecting Institutional Commitment Using Cluster Analysis, *International Research Journal of Education and Technology*. 5(4), 198 – 217



31. Mohanta, R., Gayen, P., Pal, I., Mahato, R. C. & Sen, S. (2023). Comparison among different dimensions of organizational climate of secondary school teachers of West Bengal by Mahalanobis distance. *EPRA International Journal of Research and Development (IJRD)*, 8(4), 129 – 133.
32. Mohanta, R., Gayen, P., Pal, I., Sutradhar, A. & Sen, S. (2023). Comparison among different dimensions of institutional commitment of secondary school teachers of West Bengal by Mahalanobis Distance. *International Research Journal of Modernization in Engineering Technology and Science*. 5(4). 4088-4093.
33. Mohanta, R., Sen, S., Adhikari, A. & Pal, I. (2023). Perceptual Environment: A Study on Organizational Climate Using Cluster Analysis. *International Journal of Research Publication and Review*. 4(4). 1336 – 1346.
34. Mondal, A., Ansary, K., Gorain, S. C. & Saha, B. (2018). Internet Affinity in relation to Personality and Gender. *American International Journal of Research in Humanities, Arts and Social Sciences*, 22(1), 11-15.
35. Naik, P. K., Dutta, A. N. & Sutradhar, A. (2015). Mental health of Facebook addicted and non-addicted adolescent students-a study. *Journal of International Academic Research for Multidisciplinary*, 3(5), 352-358.
36. Saha, B. & Adhikari, A. (2021). Measuring Social Relationship of Undergraduate College Students of West Bengal. *Education India Journal: A Quarterly Refereed Journal of Dialogues on Education, A UGC CARE List Journal*. 10(4). 261-269.
37. Saha, B. (2012). Creativity in relation to Socio-economic Status in Secondary School Students in West Bengal. *Indian Journal of Applied Research*, 2(2), 60-61.
38. Saha, B. (2013). Creativity in Relation to Environmental Awareness in Birbhum District: An Analytical Study. *IJSR-International Journal of Scientific Research*, 2(8), 106-107.
39. Saha, B. Sen, S. & Adhikari, A. (2021). Analysis of Attitude Towards Yoga Among College Students Using Clustering Techniques, *EPRA International Journal of Multidisciplinary Research (IJMR)*. 7(9). 308 – 314.
40. Sen, S. and Adhikari, A. (2023). Cluster Analysis on Institutional Commitment and Organizational Climate. *International Journal of Research Publication and Reviews*. 4(6). 4974-4988.
41. Sen, S. & Pal, I. (2020). Mahalanobis distance: A study on achievement of Science and Mathematics. *International Journal of Creative Research Thoughts*, 8(7), 2542-2547.
42. Sen, S., Adhikari, A., Ansary, K., Roy, S. & Pal, I. (2023). Clustering technique for analyzing leadership style of the head of the institutions. *International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)*, 3(3), 220 – 228.
43. Sen, S., Gayen, P., Mahato, R.C. and Adhikari, A. (2023). A Correlational Study on Organisational Climate and Institutional Commitment of Secondary School Teachers. *International Journal of Multidisciplinary Research and Publications*. 5(12). 152-155.
44. Sen, S., Gayen, P., Pal, I., Sutradhar, A., Ansary, K., Mahato, R.C. & Adhikari, A. (2023). Comparison among different leadership styles of head of the institution of West Bengal by Mahalanobis distance. *International Research Journal of Modernization in Engineering Technology and Science*, 5(4), 5005-5010.
45. Sen, S., Pal, I., & Adhikari, A. (2023). Comparison among self-efficacy, Depression, Anxiety and stress of postgraduate students by Mahalanobis Distance, *International Journal of Advanced Education and Research*. 8(1). 85 – 88
46. Sen, S., Pal, I., Adhikari, A. (2023). Comparison among Self-efficacy, Depression, Anxiety and Stress of Postgraduate Students by Mahalanobis Distance. *International Journal of Advanced Education and Research*. 8(1). 85-88.
47. Sen, S., Sau, P., Mahato, S., Satpati, S., Afreen, T. & Gayen, P. (2021). Depression, Anxiety and Stress of Postgraduate Students during Covid-19 Pandemic: A Study on Postgraduate Students of Sidho-Kanho-Birsha University, Purulia, West Bengal, India. *International Journal of Research Publication and Reviews*. 2(9). 586-591.
48. Sherer, M., Maddux, J. E., Mercandante, B., Prentice-Dunn, S., Jacobs, B., Rogers, R. W. (1982). The self-efficacy scale: construction and validation. *Psychological Reports*, 51(2), 663-671. <https://doi.org/10.2466/pr0.1982.51.2.663>
49. Sutradhar, A., & Sen, S. (2022). Effect of Different Dimensions of Emotional Maturity on Academic Achievement of B. Ed. Trainees—A Study. *International Journal of Research Publication and Reviews*, 3(11), 1237-1247.
50. Sutradhar, A., & Sen, S. (2022). Emotional maturity and study habits of B. Ed. trainees—A correlational study. *International Journal of Multidisciplinary Research and Development*, 9(12), 77-83.
51. Sutradhar, A., Adhikari, A., Sutradhar, S.M. & Sen, S. (2023). Use of Correlation in Educational Research. *International Research Journal of Education and Technology*. 5(5). 731-737.