



SMARTPHONE ADDICTION OF PG STUDENTS OF PURULIA DISTRICT OF WEST BENGAL

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Abstract

Smartphone addiction is a kind of addiction towards excessive use of smartphone, internet and a fear of being without a mobile phone. The present study aims to find out the difference in Smartphone Addiction of PG (postgraduate) students of Purulia district of West Bengal in regard to gender, locality and stream. It is Descriptive research following survey type study. The population of this study comprises all the PG students studying in Purulia district of West Bengal. A sum of 140 PG students have been identified as the sample for the study through a simple random sampling technique. “*Smartphone Addiction Scale*” by Kwon et al. (2013) is applied to collect the data. Descriptive statistics like mean, standard deviation and inferential statistics like t-test have been applied. To analyze the data, SPSS version 26.0 is used. Result revealed that no statistically significant difference is there between male/female, urban/rural, arts/commerce, & science/commerce PG students of Purulia district of West Bengal. But significant difference is found only between arts/science PG students of Purulia district of West Bengal.

Keywords: *smartphone addiction, PG students, internet, t-test*

Introduction

Even though a computer, tablet, or smartphone can be an incredibly useful tool, excessive usage of these gadgets can negatively impact relationships, employment, and education. An internet addiction disorder or internet abuse problem frequently drive smartphone addiction, which is also referred to as “nomophobia” (the fear of being without a mobile phone). After all, the compulsion is usually caused by the games, apps, and virtual worlds our phones and tablets introduce into our lives rather than the devices themselves (Robinson, Smith and Segal, 2024).

In this modern 21st century, educational research has reached to another level. Various modern statistical tools are being used by researchers such as t-tests, correlation, cluster analysis, Mahalanobis distance, Mann Whitney U test etc. Several studies have been done using t-tests such as, Adhikari et al. (2023c), Mahato and Sen (2021a), Mahato and Sen (2023a), Mondal and Saha (2023), Mondal et al. (2018), Karmakar et al. (2016), Mahanti, Mondal and Saha (2016), Saha (2012a; 2021), Sen, Mondal and Saha (2013), Mondal and Saha (2013), Ansary, Saha and Gorain (2021), Khan et al. (2023), Khatun, Ansary and Adhikari (2022), Ansary, Ansary and Adhikari (2022), Gayen et al. (2021), Dandapat et al. (2021), Rajak and Gayen (2022), Bag et al. (2021), Gayen and Sen (2023a; 2023b), Das, Gayen and Sen (2023b) etc. Several studies have been found on correlation, such as Das and Mahato (2024b), Mahato and Das (2024), Gayen and Sen (2021), Sutradhar and Sen (2022a; 2022b), Mahato and Sen (2023b), Sutradhar et

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al. (2023), Gayen, Sen and Adhikari (2023), Sen et al. (2023b), Adhikari, Mahato and Sen (2023), Mahato, Sen and Adhikari (2023), Kar and Saha (2021a; 2021b), Saha (2013), Saha (2012b), Mahato, Gayen and Mahato (2023a; 2023b; 2023c), Gayen (2024), Das, Gayen and Sen (2023a), Mahato, Das and Gayen (2024), Das, Mahato and Gayen (2024) etc. Several studies have been found on Cluster analysis, such as Das and Mahato (2024a), Das, Mahato and Sen (2023), Mahato, Das and Sen (2024), Adhikari and Sen (2023a; 2023b), Ansary et al. (2023), Gorain et al. (2022), Mohanta et al. (2023a; 2023d), Saha, Sen and Adhikari (2021), Sen et al. (2023a), Adhikari et al. (2023a; 2023b) etc. Several studies have been found on Mahalanobis distance, such as Das (2023), Sen and Pal (2020), Ahmed et al. (2022), Mahato and Sen (2021b), Mohanta et al. (2023b; 2023c), Sen et al. (2023c), Sen, Pal and Adhikari (2023), Adhikari (2023a; 2023b) etc. Several studies have been found on Mann Whitney U Test, such as Sen et al. (2021a; 2021b), Halder et al. (2022), Saha and Adhikari (2021), Mahato et al. (2022) etc.

Literature Review

In a study on adult smartphone addiction and family communication, Jabeen, Sarvat, and Hashmi (2021) discovered no discernible impact of smartphone addiction on family communication. Furthermore, compared to other age groups, those between the ages of 18 and 20 had a higher smartphone addiction. Pandya, Christian, and Patel (2021) conducted a study on smartphone addiction among late adolescents and young adults (ages 15-24) in Ahmedabad, Gujarat, India. They discovered notable differences in the age group, daily smartphone usage, common smartphone usage purposes, streams, and monthly smartphone recharging expenses of these individuals. During the COVID-19 epidemic, Vyas et al. (2021) conducted a study on smartphone addiction among school-age children (8-12 years), and they found a moderately good link between the effects of smartphone addiction and school-age children in Nadiad City. According to a study by Singh and Kumari (2021) on youth smartphone addiction and loneliness, there is a large, extremely favourable association between college-bound teenagers' smartphone addiction and loneliness. In their study on smartphone addiction, García-Santillán & Espinosa-Ramos (2021) examined high school students at a public institution in Port of Veracruz, Mexico. They found no statistically significant difference in smartphone addiction between male and female students. A study by Gayen and Mahato (2023) revealed a statistically significant positive correlation between the various dimensions of smartphone addiction, including overuse, tolerance, withdrawal, daily-life disturbances, positive anticipation, and cyberspace-oriented relationships among postgraduate students.

Objectives of the Study

1. To study the difference in Smartphone Addiction of PG students of Purulia district of West Bengal in regard to gender.
2. To study the difference in Smartphone Addiction of PG students of Purulia district of West Bengal in regard to locality.
3. To study the difference in Smartphone Addiction of PG students of Purulia district of West Bengal in regard to stream.

Hypotheses of the Study

H₀₁: There is no significant difference in Smartphone Addiction between male and female PG students of Purulia district of West Bengal.

H₀₂: There is no significant difference in Smartphone Addiction between urban and rural PG students of Purulia district of West Bengal.

H₀₃: There is no significant difference in Smartphone Addiction between arts and science PG students of Purulia district of West Bengal.

H₀₄: There is no significant difference in Smartphone Addiction between arts and commerce PG students of Purulia district of West Bengal.

H₀₅: There is no significant difference in Smartphone Addiction between science and commerce PG students of Purulia district of West Bengal.

Methodology of the Study

- Method:** It is a Descriptive research following survey type study.
- Population:** The population of this study comprises all the PG students studying in Purulia district of West Bengal.
- Sample and Sampling Technique:** A sum of 140 PG students have been identified as the sample for the study through a simple random sampling technique.
- Tools used:** “*Smartphone Addiction Scale*” by Kwon et al. (2013) is applied to collect the data.
- Statistic used:** Descriptive statistics like mean, standard deviation and inferential statistics like t-test have been applied. To analyze the data, SPSS version 26.0 is used.

Results and Discussions

Pair of Comparison		N	M	SD	df	Calculated 't' value	Critical 't' value	Remarks
1	Male	45	112.62	18.642	138	1.928	1.98 (0.05) & 2.63 (0.01)	Not Significant
	Female	95	106.38	17.529				
2	Urban	46	111.70	15.392	138	1.524		Not Significant
	Rural	94	106.77	19.107				
3	Arts	70	112.19	18.327	108	2.826		Significant
	Science	40	101.88	18.556				
4	Arts	70	112.19	18.327	98	1.058		Not Significant
	Commerce	30	108.20	14.445				
5	Science	40	101.88	18.556	68	1.547		Not Significant
	Commerce	30	108.20	14.445				

Table 1: Descriptive statistics along with t-value of smartphone addiction of PG students of Purulia district of West Bengal

Hypothesis Testing 1: Above table shows that the calculated ‘t’ value for male and female PG students of Purulia district of West Bengal is 1.928 which is less than that of critical ‘t’ value [1.98 (for .05 level of significance) & 2.63 (for .01 level of significance)] for the degree of freedom 138. So, the calculated ‘t’ value is not significant at 0.05/0.01 level of significance. So, the null hypothesis (H₀₁) “*There is no significant difference in Smartphone Addiction between male and female PG students of Purulia district of West Bengal*” is accepted.

Hypothesis Testing 2: Above table shows that the calculated ‘t’ value for urban and rural PG students of Purulia district of West Bengal is 1.524 which is less than that of critical ‘t’ value [1.98 (for .05 level of significance) & 2.63 (for .01 level of significance)] for the degree of freedom 138. So, the calculated ‘t’ value is not significant at 0.05/0.01 level of significance. So, the null hypothesis (H₀₂) “*There is no*

significant difference in Smartphone Addiction between urban and rural PG students of Purulia district of West Bengal” is accepted.

Hypothesis Testing 3: Above table shows that the calculated ‘t’ value for arts and science PG students of Purulia district of West Bengal is 2.826 which is greater than that of critical ‘t’ value [1.98 (for .05 level of significance) & 2.63 (for .01 level of significance)] for the degree of freedom 108. So, the calculated ‘t’ value is significant at 0.01 level of significance. So, the null hypothesis (H_{03}) “*There is no significant difference in Smartphone Addiction between arts and science PG students of Purulia District of West Bengal*” is rejected. Thus, the alternative hypothesis (H_{a3}) “*There is significant difference in Smartphone Addiction between arts and science PG students of Purulia district of West Bengal*” is accepted.

Hypothesis Testing 4: Above table shows that the calculated ‘t’ value for arts and commerce PG students of Purulia district of West Bengal is 1.058 which is less than that of critical ‘t’ value [1.98 (for .05 level of significance) & 2.63 (for .01 level of significance)] for the degree of freedom 98. So, the calculated ‘t’ value is not significant at 0.05/0.01 level of significance. So, the null hypothesis (H_{02}) “*There is no significant difference in Smartphone Addiction between arts and commerce PG students of Purulia district of West Bengal*” is accepted.

Hypothesis Testing 5: Above table shows that the calculated ‘t’ value for science and commerce PG students of Purulia district of West Bengal is 1.547 which is less than that of critical ‘t’ value [1.98 (for .05 level of significance) & 2.63 (for .01 level of significance)] for the degree of freedom 68. So, the calculated ‘t’ value is not significant at 0.05/0.01 level of significance. So, the null hypothesis (H_{02}) “*There is no significant difference in Smartphone Addiction between science and commerce PG students of Purulia district of West Bengal*” is accepted.

Major Findings of the Study: The present study aims to find out the differences in smartphone addiction of PG students of Purulia district of West Bengal in regard to gender (male and female), location (urban and rural), and stream (arts, science, and commerce). The result revealed that no statistically significant difference is there between male/female, urban/rural, arts/commerce, & science/commerce PG students of Purulia district of West Bengal. But significant difference is found only between arts/science PG students of Purulia district of West Bengal.

Conclusions

While the internet and smartphones are used as communication tools, people have a habit of to use them unnecessarily, which resulted in addiction (Singh & Kumari, 2021). The present study aims to find out the differences in smartphone addiction of PG students of Purulia district of West Bengal and found significant difference only between arts and science PG students. No statistically significant difference have been observed in terms of gender and location of residence.

References

1. Adhikari, A. (2023a). Application of Mahalanobis distance in education and educational psychology: A mini review. *Innovare Journal of Education*, 11(4), 5-7.
2. Adhikari, A. (2023b). Socio-educational perspectives: A study on human adjustment. *EPRA International Journal of Research and Development (IJRD)*, 8(1), 97-101. DOI: <https://doi.org/10.36713/epra12233>
3. Adhikari, A., & Sen, S. (2023a). Cluster analysis on institutional commitment and organizational climate. *International Journal of Research Publication and Reviews*, 4(5), 4974-4988.
4. Adhikari, A., & Sen, S. (2023b). Recent trends of cluster analysis in education. *International Research Journal of Modernization in Engineering Technology and Science*, 5(8), 1858-1861.
5. Adhikari, A., Gayen, P., Mahato, R. C., Pal, I., & Sen, S. (2023a). Multi-dimensional data analysis in education: Accumulation and comparison among variables. *International Journal of Research Publication and Reviews*, 4(5), 2243-2245.

6. Adhikari, A., Gayen, P., Sutradhar, A., & Sen, S. (2023b). A measure for measure: Statistics in Education. *International Journal of Research Publication and Reviews*, 4(5), 4239-4243.
7. Adhikari, A., Gorain, S. C., Gayen, P., Pal, I., & Sen, S. (2023c). Studying the differences: A review on t- test. *International Research Journal of Education and Technology*, 5(5), 338-349.
8. Adhikari, A., Mahato, R. C., & Sen, S. (2023). Anxiety, depression, stress, general self-efficacy and specific self-efficacy: Comparison among science and social science students. *International Journal of Advanced Research in Science, Communication and Technology (IJAR SCT)*, 4(1), 382-389.
9. Ahmed, E. A., Karim, M. R., Banerjee, M., & Sen, S. (2022). Comparison of scholastic attainment in English and Math amongst other studies at the higher secondary level: A study using Mahalanobis distance. *Educational Administration: Theory and Practice*, 28(4), 1-13.
10. Ansary, K., Ansary, S., Adhikari, A., & Sen, S. (2023). Clustering technique for analysing attitude towards value-oriented education among undergraduate students. *International journal of research publication and reviews*, 4(5), 5576-5584.
11. Ansary, K., Saha, B., & Gorain, S.C. (2021). A study on achievement motivation of undergraduate students. *International Journal of Multidisciplinary Educational Research*, 10[9(7)], 118-121.
12. 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. DOI: <https://doi.org/10.36713/epra11930>
13. Bag, K., Gayen, P., Alam, S.S., & Gorain, S.C. (2021). The attitude of university students towards co-curricular activity: A comparative study. *International Journal of Advance Research, Ideas and Innovations in Technology*, 7(1), 223-226.
14. Dandapat, M., Paramanik, S.C., Gayen, P., & Gorain, S.C. (2021). Attitude of secondary school teachers towards using ICT in English classroom of Purulia district. *International Journal of Research and Analytical Reviews (IJRAR)*, 8(1), 583-590.
15. Das, B. (2023). Application of Mahalanobis distance as a measure of lifestyle of health and sustainability and its components. *The Social Science Review: A Multidisciplinary Journal*, 1(1), 44-52.
16. Das, B., & Mahato, S. (2024a). Analysing positive mental health among students in Purulia district, West Bengal, using clustering techniques. *The Social Science Review: A Multidisciplinary Journal*, 2(3), 12-26.
17. Das, B., & Mahato, S. (2024b). Lifestyle of health and sustainability: Comparison of correlations between rural-urban students in Purulia district, West Bengal using Fisher Z-Transformation. *The Social Science Review: A Multidisciplinary Journal*, 2(3), 229-240.
18. Das, B., Gayen, P., & Sen, S. (2023a). Lifestyle of health and sustainability (LOHAS): A comparative study on undergraduate students. *International Journal of Advanced Research in Science, Communication and Technology (IJAR SCT)*, 3(1), 32-44.
19. Das, B., Gayen, P., & Sen, S. (2023b). Lifestyle of health and sustainability (LOHAS) of undergraduate students of Purulia district of West Bengal. *EPRA International Journal of Socio-Economic and Environmental Outlook (SEEO)*, 10(8), 13-19.
20. Das, B., Mahato, S., & Gayen, P. (2024). Lifestyles of health and sustainability (LOHAS): Differentiating relationships in regard to stream of study. *The Social Science Review: A Multidisciplinary Journal*, 2(1), 1-13.
21. Das, B., Mahato, S., & Sen, S. (2023). Clustering Technique for analyzing lifestyle of health and sustainability of undergraduate students. *International Journal of Advanced Research in Science, Communication and Technology (IJAR SCT)*, 3(1), 207-221.
22. García-Santillán, A., & Espinosa-Ramos, E. (2021). Addiction to the smartphone in high school students: How it's in daily life? *Contemporary Educational Technology*, 13(2), 1-14. <https://doi.org/10.30935/cedtech/9609>
23. Gayen, P. (2024). Academic resilience & m-learning of undergraduate students: A correlational study. *Indian Journal of Multidisciplinary Research*, 1, 35-39.
24. Gayen, P., & Mahato, R. C. (2023). Smartphone addiction of postgraduate students of Sidho-Kanho-Birsha University, Purulia. *The Social Science Review: A Multidisciplinary Journal*, 1(1), 38-43.
25. 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.
26. Gayen, P., & Sen, S. (2023a). A study on interest in teaching of pre-service language trainee teachers of Bankura and Purulia district of West Bengal. *International Journal of Multidisciplinary Educational Research*, 12[7(1)], 79-83.
27. Gayen, P., & Sen, S. (2023b). A study on technological pedagogical and content knowledge (TPACK) of pre-service language trainee teachers of Bankura and Purulia district of West Bengal. *International Journal of Creative Research Thoughts (IJCRT)*, 11(4), h735-h739.
28. Gayen, P., Dandapat, M., Das, C., & Ansary, K. (2021). Attitude towards English as a language and medium of instruction: A study in secondary school students in Cooch Behar district of West Bengal. *International Journal of Research and Analytical Reviews (IJRAR)*, 8(1), 120-124.

29. Gayen, P., Sen, S., & 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), 426-436.
30. 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.
31. Halder, 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. DOI: 10.12691/education-10-12-5
32. Jabeen, U., Sarwat, H., & Hashmi, N. (2021). Smartphone addiction and family communication in adults. *Humanities & Social Sciences Reviews*, 9(3), 1288-1294. DOI: 10.18510/hssr.2021.93127
33. Kar, D., & Saha, B. (2021a). A study of relationship between leadership style and emotional intelligence of undergraduate students. *International Journal of Research and Analytical Reviews (IJRAR)*, 8(2), 13-15.
34. Kar, D., & Saha, B. (2021b). Leadership style and adjustment ability among undergraduate students: A correlational study. *International Journal of Creative Research Thoughts (IJCRT)*, 9(9), d148-d151.
35. 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.
36. Khan, S., Roy, S., Gorain, S.C., & Adhikari, A. (2023). Cyber schooling: A study on the higher education learners. *IAR Journal of Humanities and Social Sciences*, 4(1), 1-10. DOI: 10.47310/iarjhss.2023.v04i01.001
37. Khatun, S., Ansary, K., & Adhikari, A. (2022). Attitude towards yoga education among undergraduate students. *EPRA International Journal of Multidisciplinary Research (IJMR)*, 8(12), 9-13. DOI: <https://doi.org/10.36713/epra11931>
38. Know, M., Lee, J., Won, W., Park, J., Min, J., Hahn, C., Gu, X., Choi, J., & Kim, D. (2013). Development and validation of smartphone addiction scale (SAS). *PLOSOne*, 8(2), 1-7. <https://doi.org/10.1371/journal.pone.0056936>
39. Mahanti, J., Mondal, B.C., & Saha, B. (2016). Internet dependency of undergraduate students: An empirical study. *American International Journal of Research in Humanities, Arts and Social Science*, 12(2), 171-174.
40. Mahato, A., Gayen, P., & Mahato, R. C. (2023a). 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.
41. 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. <https://doi.org/10.36713/epra12603>
42. Mahato, D., Gorain, S.C., Roy, S., & Adhikari, A. (2022). Introspecting flipped classroom: A survey on higher education students. *Galore International Journal of Applied Sciences & Humanities*, 6(4), 56-69. DOI: <https://doi.org/10.52403/gijash.20221009>
43. Mahato, M., Gayen, P., & Mahato, R. C. (2023c). 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.
44. Mahato, R. C., & Sen, S. (2021a). Academic stress, self – efficacy and anxiety: A study on Mathematics of higher secondary level students in Purulia district of West Bengal, India. *International Journal of Creative Research Thoughts (IJCRT)*, 9(5), c969-c980.
45. Mahato, R. C., & Sen, S. (2021b). Application of Mahalanobis distance to determine the dynamical nature of academic stress, self-efficacy and anxiety in mathematics. *International journal of advances in engineering and management (IJAEM)*, 3(5), 1398-1401.
46. Mahato, R. C., & Sen, S. (2023a). A study of contexts knowledge (CK1), technological pedagogical content knowledge (TPCK) and attitudes towards creative teaching (ACT) among the pre- Service Mathematics trainee teachers in West Bengal, India. *Journal of emerging technologies and innovative research (JETIR)*, 10(4), h35-h43.
47. Mahato, R. C., & Sen, S. (2023b). 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.
48. Mahato, R. C., Sen, S., & Adhikari, A. (2023). A study of DASS-21 and the self-efficacy scale on post-graduate students. *International Journal of Research Publication and Reviews*, 4(6), 4249-4255.
49. Mahato, S., & Das, B. (2024). Mental well-being among students with respect to gender, institution and residence: Insight from Purulia district, West Bengal. *The Social Science Review A Multidisciplinary Journal*, 2(2), 164-175.
50. Mahato, S., Das, B., & Gayen, P. (2024). Achievement on language subjects of secondary school students: Differentiating relationships in regard to gender and type of institute. *The Social Science Review: A Multidisciplinary Journal*, 2(1), 78-86.
51. Mahato, S., Das, B., & Gayen, P. (2024). Achievement on language subjects of secondary school students: Differentiating relationships in regard to gender and type of institute. *The Social Science Review: A Multidisciplinary Journal*, 2(1), 78-86.
52. Mahato, S., Das, B., & Sen, S. (2024). Test of changing status in achievement on language subjects for class vii student: A study by Mahalanobis distance. *International Journal of Research Publication and Reviews*, 4(10), 1540-1545.

53. Mohanta, R., Adhikari, A., Pal, I., & Sen, S. (2023a). Introspecting institutional commitment using cluster analysis. *International Research Journal of Education and Technology*, 5(4), 198-217.
54. Mohanta, R., Gayen, P., Pal, I., Mahato, R. C., & Sen, S. (2023b). 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.
55. Mohanta, R., Gayen, P., Pal, I., Sutradhar, A., & Sen, S. (2023c). 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.
56. Mohanta, R., Sen, S., Adhikari, A., & Pal, I. (2023d). Perceptual environment: A study on organizational climate using cluster analysis. *International Journal of Research Publication and Reviews*, 4(4), 1336-1346.
57. Mondal, A., & Saha, B. (2017). Job satisfaction of secondary school teachers in relation to personality and emotional intelligence. *American Journal of Educational Research*, 5(10), 1097-1101. DOI: 10.12691/education-5-10-11
58. 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.
59. Mondal, N., & Saha, B. (2013). Achievement difference in science at secondary level in Darjeeling district: A comparative study. *International Journal of Scientific Research*, 2(2), 85-86.
60. Pandya, C. N., Christian, D. S., & Patel, M. M. (2021). A cross-sectional study on smart-phone addiction among late adolescents and young adults (aged 15 to 24 years) of Ahmedabad city, Gujarat, India. *Journal of Evidence-Based Medicine and Healthcare*, 8(9), 491-496. DOI:10.18410/jebmr/202196
61. Rajak, P., & Gayen, P. (2022). A Study of the interests in Mathematics of secondary level students of West Bengal. *International Journal of Research Publication and Reviews*, 3(6), 132-135.
62. Robinson, L., Smith, M., & Segal, J. (2024). Smartphone and Internet Addiction. *HelpGuide.org*. Retrieved from <https://www.helpguide.org/articles/addictions/smartphone-addiction.htm>
63. Saha, B. (2012a). A comparative study of environmental awareness among teacher trainees of West Bengal. *Indian Streams Research Journal*, 2(9), 1-5.
64. Saha, B. (2012b). Creativity in relation to socio-economic status in secondary school students in West Bengal. *Indian Journal of Applied Research*, 2(2), 60-61.
65. 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.
66. Saha, B. (2021). Attitude towards yoga practice among college students with regard to gender, residence and stream of study. *IAR Journal of Humanities and Social Sciences*, 2(5), 25-29. DOI: 10.47310/iarjhss.v02i05.004
67. Saha, B., & Adhikari, A. (2021). Measuring social relationship of undergraduate college students of West Bengal. *Education India Journal*, 10(4), 261-269.
68. 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. DOI: <https://doi.org/10.36713/epra8552>
69. Sen, B., Mondal, N., & Saha, B. (2013). A comparative study of poor achievement in physics at the higher secondary level with respect to secondary level in Birbhum district. *International Journal of Scientific Research*, 2(4), 66-67.
70. Sen, S., & Pal, I. (2020). Mahalanobis distance: A study on achievement of science and mathematics. *International journal of creative research thoughts (IJCRT)*, 8(7), 1-6.
71. Sen, S., Adhikari, A., Ansary, K., Roy, S., & Pal, I. (2023a). 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. DOI: 10.48175/IJARSCT-9806
72. Sen, S., Gayen, P., Mahato, R.C., & Adhikari, A. (2023b). A correlational study on organisational climate and institutional commitment of secondary school teachers. *International Journal of Multidisciplinary Research and Publications (IJMRAP)*, 5(12), 152-155.
73. Sen, S., Gayen, P., Pal, I., Sutradhar, A., Ansary, K., Mahato, R. C., & Adhikari, A. (2023c). Comparison among different leadership styles of head of the institution of West Bengal by Mahalanobis distance. *International journal of modernization in engineering technology and science*, 5(4), 5005-5010.
74. Sen, S., Mandi, A., Dhara, B., Ansary, F., Mandi, M., Murmu, M.B., & Gayen, P. (2021a). General self-efficacy and specific self-efficacy of postgraduate students in the COVID-19 pandemic: A study. *International Journal of Research Publication and Reviews*, 2(9), 531-536.
75. 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.
76. Sen, S., Sau, P., Mahato, S., Satpati, S., Afreen, T., & Gayen, P. (2021b). 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.

77. Singh, R., & Kumari, V. (2021). Loneliness and smartphone addiction among youths: A correlation study. *Indian Journal of Applied Research*, 11(3), 51-53. DOI: 10.36106/ijar
78. Singh, R., & Kumari, V. (2021). Loneliness and smartphone addiction among youths: A correlation study. *Indian Journal of Applied Research*, 11(3), 51-53. DOI: 10.36106/ijar
79. Sutradhar, A., & Sen, S. (2022a). 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.
80. Sutradhar, A., & Sen, S. (2022b). Emotional maturity and study habits of B. Ed. trainees–A correlational study. *International Journal of Multidisciplinary Research and Development*, 9(12), 77-83.
81. Sutradhar, A., Adhikari, A., Sutradhar, S. M., & Sen, S. (2023). Use of correlational analysis in educational research. *International research journal of Education and Technology*, 5(5), 731-737.
82. Vyas, D., Patel, B., Janki, D., Rathod, D., Mansuri, F., Parmar, H., & Vishwa, S. (2021). Effect of smartphone addiction among school going children (8-12 years) during covid-19 pandemic. *Journal of Emerging Technologies and Innovative Research*, 8(10), e61-e71.