



INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

THE ROLE OF COGNITIVE STYLES ON ACADEMIC ACHIEVEMENT OF UNIVERSITY STUDENTS OF THE MAYURBHANJ DISTRICT

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Abstract: The present study aims to examine the role of cognitive style on the academic achievement of university students of the Mayurbhanj district. In this study, Martin's (1983) cognitive style inventory was used for primary data collection. Secondary data will be collected from first and second-semester examinations as an academic achievement score. A demographic self-structured questionnaire was used to reduce biased data and improve accuracy. A total of N=200 participants (100 boys & 100 girls) have taken into the age group of 18 to 35 years. 't-test' is used for data analysis and hypothesis testing. Among the two hypotheses, the first has rejected H_0 (t-value is 2.32, $df=198$, $P \leq 0.05$), and the second H_0 has accepted (t-value is 1.19, $df=198$, $P \geq 0.05$). The cognitive style influences the academic achievement of university students, but cognitive styles have an absence of gender differences.

Index Terms: Cognitive styles, systematic, intuitive, academic achievement, university students`

1. INTRODUCTION

1.1 Cognitive styles. Cognitive style refers to how we process our information, alternatively, it is related to how our information is received and organized. Organization and processing mean in which way an individual reacts to environmental stimuli it shows individual differences in cognitive factors (Noroozi, 2003). For instance, some groups have similar knowledge of a particular task but they react differently to a particular stimulus, some individuals react very slowly and reflectively, while others are quick reactions in most circumstances. These are the bridges between our personality types and our mental abilities. Cognitive styles are thinking styles and are mostly affected and affected by cognitive abilities (Noroozi, 2003). It is recognized how the brain perceives and processes environmental information but does not specify the content of schemas. Cognitive style is like a sea it-initiated, transit, determined situational conscious activities for individual control and organized, transmit and receive information, and create suitable behavior. These can be described basis on the left vs right hemispheres of the brain, parallel vs sequential processing, abstract vs exemplar vs abstract thinking, field independence vs field dependence, spatial vs linguistic, convergent vs divergent. Cognitive styles are explained human perceptual traits and styles of thinking and these are based on different standpoints of human cognition (Lemes, 1988).

1.2 Explanation models of cognitive styles

Cognition is an act or process of knowing. It is a cluster of mental functions like perception, reasoning, judgment, awareness, and remembering. Cognition is universal and uniform in all human beings, but it varies, differs from one individual to another, and helps our lives smoothly lead. This difference brings uniqueness to every individual and it is called "Cognitive Style".

Five dimensions of Cognitive styles are given by Martin (1988) these are

- **Systematic style.** individuals who are identified in systematic cognitive style are related with rational behavior, logical thought, reality-oriented in nature with uses well-organized approach of thinking, and overall plan for decision making and problem-solving.
- **Intuitive style.** intuitive style related to an unexpected and unpredictable sequence of analytical processing and steps is used when making a decision or solving a problem relies on practical skills and explores and discards alternatives very quickly.
- **Integrated style.** if an individual has an integrated style rate high on both systematic and intuitive style. integrated style individuals are can change their style quickly and easily with the unconscious and take their place in a matter of seconds. Integrated style people have a “rapid-fire” ability that generates energy and is proactive. They are called “problem seekers” because they have the excitement to solve problems in different ways.
- **Undifferentiated style.** Undifferentiated style individuals tend to be passive, calm, withdrawn, and reflective. They have low on both systematic and intuitive cognitive styles, and such persons are not to differentiate or display their cognitive style from systematic or intuitive styles. They are often taking advice from others for problem-solving.
- **Split style.** when a person rates mid-point of both intuitive and systematic style is called split style which involves an equally average degree of specialization. They are consciously reacting to a problem in an appropriate style, which means they are using a different style in different settings or different situations.

1.3 Academic achievement. Achievement refers to how students reach their academic goals, like excellence in sports, behavior, confidence, arts, culture, and communication skills. Students are achieved through learning and practices and their learning is assessed through the process of the percentage of marks or grades and CGPA (Cumulative Grade Point Average) achieved by students. Learning is a cognitive and mental process in which students are trying to solve problems through the questions & answer methods in the exam. For effective learning motivation, cognitive style, and interests are key factors. In a recent study, academic achievement refers percentage of marks obtained by students in their last exam.

2. REVIEW OF LITERATURE

Hussain & Razali (2021) researched “Influence of Style on Student’s Academic Achievement at Faculty of Economics, National University of Malaysia”. This study explores the relationship between academic achievement and two dimensions of cognitive styles field-independent and field-dependent. In this experiment, 100 participants were tested and their background, achievement, and cognitive styles were using questionnaires. Researchers conclude that academic achievement was not influenced by gender, but affected by race factors showing that Chinese students are better performance than other races but between Chinese and Indians, there were no inborn differences in their achievement. This study also shows that cognitive styles impact on academic achievement of students, and field-independent or analytical styles were a better achievement in academic than global or field-dependent style students.

Nafar et al., (2019) researched “Cognitive Styles, Academic Achievement and Gender: A Study of Higher Education”. They were taking a sample of 397 students from the Central University of Kashmir and the University of Kashmir from the students of the 3rd semester. inventory was used which is developed by Praveen Kumar Jha in 2001 for to measure cognitive styles. Using correlation analysis showed that there is a positive correlation between academic achievement and correlation, and cognitive styles impact on academic achievement of students but the t-test analysis concluded that there were no gender differences between academic achievement and cognitive styles.

Sharma et al., (2018) revealed a study on “Relationship of Cognitive Styles with Academic Achievement among Secondary School Students”. This study is experimental, the purpose of this study is to compare cognitive styles with two ways of teaching methods and teaching materials consisting of English grammar. The cognitive styles (field-independent/ field-dependent) of participants are measured with GEFT (Group Embedded Figure Test) which was developed by Witkin et al. and is used on 9th-grade students of Om Public school Sonapat. They were taking 64 students in this research and using Pearson Product Moment Correlation was used for data analysis. The findings of the study suggested that the cognitive styles of participants are positively correlated with academic achievement.

Kumar et al., (2017) researched “Profile of Cognitive Styles of Principals of Andhra Pradesh Model Schools”. They were taking a sample of 77 participants using the simple random sampling technique and cognitive style inventory was used for data collection. They concluded that 37 participants possess a split cognitive style, 28 have systematic, and the other three cognitive styles have a small number of divisible among them.

Katoch & Thakur (2016) researched “Cognitive Styles of Secondary School Teachers”. Researchers were taking samples 200 from the Kullu District of Himachal Pradesh. They are measuring cognitive styles like intelligence, memory, and perception it is also affecting teachers’ teaching process using the inventory of Dr. Praveen Kumar Jha applied the t-test for data analysis. Researchers conclude that there was a significant difference between an intuitive and systematic cognitive style, but there was no difference between among other three types of cognitive styles in males and females.

3. RATIONALE OF THE STUDY

Every individual has different ways of learning and thinking, known as cognitive styles. It is a crucial role in our creation of cognitive schema and impacts our judgment, decision-making, and problem-solving. The present study shows the role and impact of cognitive styles of students on their academic achievement. Taking to previous research cognitive style does not differ with gender but affects our other mental processes. However, the present research is helpful to the institution, school administrators, teachers, policymakers, and students.

3.1 OBJECTIVES OF THE STUDY

- To investigate the role of cognitive styles on academic achievement of university students of the Mayurbhanj district.
- To investigate the difference in cognitive styles on gender differences of university students of the Mayurbhanj district.

3.2 HYPOTHESES OF THE STUDY

1. There will be no significant impact of cognitive styles on the academic achievement of university students of the Mayurbhanj district.
2. There will be no significant difference in cognitive styles on gender differences of university students of the Mayurbhanj district.

4. METHOD OF THE STUDY

4.1 Variables- Cognitive Style was worked as an independent factor and academic achievement was taken as a dependent factor in this study.

4.2 Plan & Design- Research design work as a blueprint in research, it is given direction and shows the way to the research. In this study research design will be adapted according to a suitable study to their objectives and research questions. It is a mixed-method (both qualitative and quantitative). First, the researcher finds cognitive style types and then adapted academic achievement.

4.3 Population & Sample- In this study, a sample of 200 (100 boys & 100 girls) students of North Orissa University, Govt. Women’s college, MPC autonomous college, B.B. college, and Udala college students’ age group of 18 to 35 years old are taken as samples. In this research, purposive sampling techniques will be used.

4.4 Datatypes- In this study, the researcher first collects primary data for determining the cognitive style and after determines adapted secondary data for further research. So, both primary and secondary data are used for purpose of the research

4.5 Measures of Research- In this study basic required tools are used for data collection for purposes:

- **Cognitive Style Inventory (CSI).** It was constructed by Martin in 1983. This inventory measures two types of cognitive styles systematic and intuitive. It is used five strategies for their rating (SD, D, N, A, and SA). So, it is known as a five-point rating scale (Likert scale).
- **Socio-demographic datasheet.** The socio-demographic data sheet is a self-structured sheet prepared by the researcher which is specifically used for the study. It stores data like age, sex, religion, class, studying hours, information on medical diseases, and disorder.
- **Academic Achievement.** It is referred to the total marks or grades obtained by students on their first and second semester examinations.

4.6 Statistical Technique- Students’ t-test will be used for data analysis using the SPSS version of 20.0.

4.7 Procedure

In this present study, the researcher collects data from university students of the Mayurbhanj district. Taking prior permission from the heads of the department and administration of the institute the researcher will start the collection of data. The data from students was collected initial stage of academic session 2021-22. The researcher requested participants to give their true and honest responses and he will keep the data confidential.

5. RESULTS AND DISCUSSION

ANALYSIS BASED ON HYPOTHESIS

Hypothesis 1

There will be no significant impact of cognitive styles on the academic achievement of university students of the Mayurbhanj district.

Table 1 shows the mean score and 't' value of academic achievement with two types of cognitive styles (systematic and intuitive) of university students:

Cognitive styles of students	N	Mean of Academic achievement	SD	df	't' value	P	Significance
Systematic cognitive style	100	77.6	10.55	198	2.32	0.05	Significant
Intuitive cognitive style	100	74.07	10.91				

Source: Primary Data

Note: * 0.05= level of significance, P= Probability, N= No. of Participants, SD= Standard Deviation, df=degree of freedom

Table 1 shows the mean score of academic achievement score for intuitive and systematic cognitive styles of university students with standard deviation and t- value. The mean score for systematic cognitive style is 77.6 with an SD of 10.55 and the intuitive mean score is 74.07 with an SD of 10.91. the 't' value is 2.32 which is greater than our critical value and significant. Hence the researcher rejected the null hypothesis and concluded that cognitive style impact on academic achievement of university students in the Mayurbhanj district. Systematic cognitive styles students have better cognitive styles than intuitive cognitive style students.

Hypothesis 2

There will be no significant difference in cognitive styles on gender differences of university students of the Mayurbhanj district.

Table 2 shows the mean score and 't' value of cognitive styles score with gender differences of university students:

Gender	N	Mean score of Cognitive style	SD	df	't' value	P	Significance
Boys	100	120.34	32.76	198	1.19	0.05	Not significant
Girls	100	125.63	29.99				

Source: Primary Data

Note: * 0.05 = level of significance, P= Probability, df= degree of freedom, SD= Standard Deviation, N= No. of Participants

Data have shown in table 2, that the means score of boys is 120.34 with SD 32.76, and the means score of girls is 125.63 with 29.99. The 't' value is 1.19, and an alpha level of 0.05. The df of 200 participants is 198 (N-2) and the critical value of 't' is greater than the obtained value. Here the researcher will accept the null hypothesis, which means there will be no significant difference in cognitive styles among boys and girls of the Mayurbhanj district. The hypothesis concludes that academic achievement will be equal among boys and girls students.

Research evidence that cognitive styles impact the academic achievement of university students of the Mayurbhanj district of Odisha (hypothesis 1). The systematic cognitive style is more academic-oriented than the intuitive cognitive style among the two styles. In this study total of 200 university students are used between the age group of 18 to 35 years from the Mayurbhanj district. Systematic cognitive style students are more analytic, logical, and sequentially followed step by step in problem-solving (Praveen Kumar, 2001). In this study, cognitive style inventory was used which is developed by Martin (1983). Hypothesis-2, there will be no gender difference in cognitive styles, both boy and girls students are used systematically and intuitive cognitive style ('to value -1.19, df=198, P>0.05). Previous studies conclude that there will be no difference among gender in cognitive styles, Dr. Z.A Nadaf (2019), Arrington (1987).

6. CONCLUSION

1. Cognitive style affected the academic achievement of university students.
2. Cognitive style does not differ with gender.
3. Systematic cognitive style is more achievement-oriented than intuitive cognitive style.

7. DELIMITATIONS OF THE STUDY

1. The present study is limited to the Mayurbhanj district only.
2. The researcher limited the study to university students only.
3. Samples have taken not large.
4. It is a simple study and does not take a controlled study.

8. FURTHER RECOMMENDATIONS

- Similar study (cognitive style as a variable) can be done with another variable like motivation, optimism, and life satisfaction.
- A study will be taken with different samples like schools, colleges, and teachers.
- A study can be conducted between personality traits and cognitive styles.

REFERENCES

1. Singh Katoch, K., & Meera Thakur, I. I. (n.d.). Cognitive Styles of Secondary School Teachers. International Journal of Advanced Research in Education & Technology (IJARET), 3(4), 147. www.ijaret.com
2. Witkin, H. A., & Wi, H. A. (n.d.). The role of cognitive style in academic performance and teacher-student relations (RB-73-II)
3. Lata Sharma, H., & Ranjan, P. (2018). Relationship of Cognitive Styles with Academic Achievement among Secondary School Students. In International Journal of Research in Engineering, IT and Social Sciences. <http://indusedu.org>
4. Sajid, S., Kazmi, H., & Dubey, A. (n.d.). Cognitive Style, Occupational Stress and Job Satisfaction among Marketing and Banking Professionals. <https://ssrn.com/abstract=3503252>
5. Hussin, M., Razali, N. M., & SE., MS., A. M. (2021). Influence of Cognitive Style on Students' Academic Achievement at Faculty of Economics, National University of Malaysia. International Journal of Academic Research in Business and Social Sciences, 11(3). <https://doi.org/10.6007/ijarbss/v11-i3/8983>.
6. Atsuwe, B. A., & Mtoh, T. T. (2019). Effect of Cognitive Style on Students Achievement and Retention in Physics in Senior Secondary School in Gwer-West Local Government Area, Benue State, Nigeria (Vol. 7). <http://www.ijari.org>.
7. Singh Katoch, K., & Meera Thakur, I. I. (n.d.). Cognitive Styles of Secondary School Teachers. International Journal of Advanced Research in Education & Technology (IJARET), 3(4), 147. www.ijaret.com
8. Kazmi, S. S. H., & Dubey, A. (2020). Cognitive Style, Occupational Stress and Job Satisfaction among Marketing and Banking Professionals. SSRN Electronic Journal. <https://doi.org/10.2139/ssrn.3503252>

9. Nadaf, A., Nadeem, N. A., & Professor, S. (2019). Cognitive Styles, Academic Achievement and Gender: A Study of Higher Education Awareness of Human Rights, Legal Literacy and Social Well Being of Secondary School Students of Srinagar and Budgam District Of Jammu and Kashmir View project. *THINK INDIA JOURNAL*. <https://www.researchgate.net/publication/338740648>
10. Srinivas Kumar, D. (2017). Profile of Cognitive Styles of Principals of Andhra Pradesh Model Schools. *American International Journal of Research in Humanities, Arts and Social Sciences AIJRHASS*, 17–424. <http://www.iasir.net>
11. S, R. J., & Joshith, D. (2018). Learning style about cognitive style of prospective teachers (Vol. 5). *JETER*. www.jetir.org
12. Novak, A., Vizjak, K., & Rakusa, M. (2022). Cognitive Impairment in People with Epilepsy. In *Journal of Clinical Medicine* (Vol. 11, Issue 1). MDPI. <https://doi.org/10.3390/jcm11010267>

