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Cognitive Styles of Prospective Teachers in Thiruvallur District

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Abstract

Cognitive style refers to an individual's consistent way of perceiving, organizing, and processing information. For prospective teachers, cognitive styles play a crucial role in shaping learning approaches, teaching strategies, classroom management, and problem-solving abilities. This study aims to explore the cognitive styles of prospective teachers enrolled in teacher education programs, with a focus on identifying dominant orientations such as field-dependent vs. field-independent and analytic vs. holistic. A research study was conducted to know the Cognitive Styles of Prospective Teachers for total population. Descriptive Survey Method was adopted and a sample of 300 teachers drawn from Prospective Teachers was selected following the random sampling technique. Cognitive Style Inventory (CSI) was used. The findings revealed that prospective teachers exhibit a wide range of cognitive styles, with significant proportions showing field-independent/analytic orientations conducive to self-directed learning and problem-solving, while others demonstrated field-dependent/holistic orientations supportive of collaborative and contextual learning. The investigator used appropriate statistical techniques like 't' test and F test (ANOVA).

Keywords: Cognitive Styles; Prospective Teachers; Field-Dependence; Field-Independence; Teacher Education; Learning Approaches; Teaching Strategies; Teaching Effectiveness

1. Introduction

Cognitive style refers to the consistent way individuals perceive, process, and respond to information in learning and problem-solving situations. Unlike intelligence, which is concerned with the level of performance, cognitive style emphasizes how learners approach a task. In teacher education, understanding cognitive styles is vital because prospective teachers' thinking patterns strongly influence their instructional strategies, classroom management, problem-solving abilities, and overall teaching effectiveness. Prospective teachers in their cognitive styles not only affect their academic performance but also shape the methods they will adopt in future classrooms. Teachers with field-independent or analytic styles may emphasize structure, logic, and self-reliance, while those with field-dependent or holistic styles may rely more on social interaction, contextual cues, and collaborative learning. Thus, exploring cognitive styles can provide meaningful insights for designing effective teacher-training programs.

2. Need of the study

The quality of education largely depends on the competence and preparedness of teachers. In this regard, understanding the cognitive styles of prospective teachers is essential, as these styles determine how future teachers acquire knowledge, process information, solve problems, and ultimately deliver instruction in classrooms. In the context of Tiruvallur district, where teacher education institutions cater to both rural and urban populations, prospective teachers bring with them diverse cultural, social, and academic backgrounds. These differences may influence their preferred cognitive styles, which in turn affect their readiness for effective teaching. Identifying such variations will help teacher educators design appropriate pedagogical strategies that cater to multiple learning preferences. Moreover, prospective

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teachers with different cognitive orientations may adopt different teaching practices in future classrooms. Understand the dominant cognitive styles of prospective teachers in Tiruvallur district. Identify variations in cognitive styles across demographic and institutional factors. Suggest educational interventions that can enhance teacher training programs. Contribute to preparing effective, reflective, and adaptable teachers for future classrooms.

3. Review of Related Literature

3.1. Suryalatha, Subramanian (2021)

Investigation of Prospective women teacher's Cognitive style in terms of different variables. Cognitive style is a hypothetical construct developed to explain the process of mediation between stimuli and responses. The term cognitive style refers to the characteristics ways in which individuals conceptually organize the environment. The present study was conducted to investigate the cognitive style of prospective women teachers concerning their background variables. For result analysis, the t' test has been used. Upon verifying the hypothesis, a significant difference has been found between Cognitive Styles among Prospective women teachers due to variation in their type of institution, locality of residence.

3.2. Renjith and Dr. Vaporosity (2014)

The Learning style in relation to cognitive style of Prospective teachers. Result indicates gender difference is not affected by cognitive style and learning style among prospective teachers. Cognitive style and learning style of prospective teachers are affected by the subject they study. Learning Style and cognitive style of prospective teachers are correlated.

3.3. Dr Madhu Sahni (2022)

A study of Academic Achievement of Senior Secondary School Students in relation to their Cognitive Style and Personality. The study aims to investigate the effects of cognitive style and personality on senior secondary school students' academic achievement in district Rohtak (Haryana, India). The findings show that the students' academic achievement is average and that cognitive style and personality have a significant independent impact on students' academic achievement The results also show that these variables have a substantial two-factor interaction influence on students' academic achievement.

4. Objectives

To find out whether there is any significant difference in cognitive styles of future teachers in respect to

- Gender
- Locality
- Types of Management
- Age

5. Hypotheses of the study

- There is no significant difference between (Gender) male and female prospective teachers with respect to their cognitive styles.
- There is no significant difference between rural and urban prospective teachers with respect to their cognitive styles.
- There is no significant difference between type of management (government / government-aided / private) prospective teachers with respect to their cognitive styles.
- There is no significant difference between prospective teachers belonging to different age group (below 30-Years, 31-40 Years, 41-50 Years and above 51 Years) with respect to their cognitive styles.

6. Methodology

The investigator adopted the descriptive survey method of study and selected the stratified random sampling technique. 300 prospective teachers were randomly selected from the Tiruvallur district from various colleges belongs to government, government-aided and self-financed management. Cognitive Style Inventory (CSI) developed by Praveen Kumar Jha was used to assess the cognitive styles of the respondents. A Personal Data Sheet was also created by the

investigator. The formulated hypotheses and objectives were tested using appropriate statistical technique t-test and F-Test Analysis of Variance (ANOVA) and Correlation Coefficient analysis.

7. Testing of Hypothesis

7.1. Hypothesis – 1

There is no significant difference between (Gender) male and female prospective teachers with respect to their cognitive styles.

Table 1 Details of t-Test Result for Gender

Gender	N	Mean	SD	t-Value	Remark
Male	13	125.38	17.64	0.245	Not Significant
Female	287	125.84	13.86		

As shown in the Table 1, the mean score for Male (N= 13) is 125.38 with SD of 17.64 and the mean score for Female (N = 287) is 125.84 with SD of 13.86. The calculated t-value (0.245) is less than the table value (1.96) at 0.05 level of significance. It is inferred from these results (t = 0.245 < 1.96), there is no significant difference between male and female prospective teachers on cognitive styles. It can be concluded that null hypothesis 1 is accepted.

7.2. Hypothesis – 2

There is no significant difference between rural and urban prospective teachers with respect to their cognitive styles.

Table 2 Details of t-Test Result for Locality

Locality	N	Mean	SD	t-Value	Remark
Rural	13	102.57	15.18	0.215	Not Significant
Urban	287	109.36	9.17		

As shown in the Table 2, the mean score for Rural (N= 13) is 102.57 with SD of 15.18 and the mean score for Urban (N = 287) is 109.36 with SD of 9.17. The calculated t-value (0.215) is less than the table value (1.96) at 0.05 level of significance. It is inferred from these results (t = 0.215< 1.96), there is no significant difference between male and female prospective teachers on cognitive styles. It can be concluded that null hypothesis 2 is accepted.

7.3. Hypothesis – 3

There is no significant difference among type of management (government / government-aided / private) prospective teachers with respect to their cognitive styles.

Table 3 Result of One-Way ANOVA for Types of Management

Demographic Variable	Nature	Sum of Squares	DF	Mean Square	F	Remark
Types of Management	Between Groups	1275.2	3	425.06	2.192	Not Significant
	With in Groups	57410	296	193.95		
	Total	58685.64	299			

As shown in Table 3, the obtained value for F is 2.192; it is less than the table value 3.84 at 0.05 level of significant. There is no significant different on cognitive styles of prospective teachers in thiruvallur district based on their type of management (government / government-aided / private). It can be concluded that null hypothesis 3 is accepted.

7.4. Hypothesis – 4

There is no significant difference between prospective teachers belonging to different age group (below 30-Years, 31-40 Years, 41-50 Years and above 51 Years) with respect to their cognitive styles.

Table 4 Result of One-Way ANOVA for Age Group

Demographic Variable	Nature	Sum of Squares	df	Mean Square	F	Remark
Age Group	Between Groups	3469.93	3	1156.643	6.201	Significant
	With in Groups	55216.71	296	186.54		
	Total	58685.64	299			

As shown in Table 4, the obtained value for F is 6.201; it is greater than the table value 3.84 at 0.05 level of significant. There is significant different on cognitive styles of prospective teachers in thiruvallur district based on their age group (below 30-Years, 31-40 Years, 41-50 Years and above 51 Years). It can be concluded that null hypothesis 4 is rejected.

8. Educational Implications

- Differentiated Instruction in Teacher Education - Since prospective teachers exhibit both field-independent/analytic and field-dependent/holistic styles, teacher educators should provide varied instructional strategies such as lectures, discussions, case studies, simulations, and cooperative learning activities.
- Meta cognitive Training - Prospective teachers should be trained to recognize their own cognitive styles and develop meta cognitive strategies. This will help them adapt teaching methods flexibly to meet the needs of diverse learners in schools.
- Use of Technology and Media - ICT-based learning platforms can be employed to cater to multiple styles. For example, visual learners may benefit from multimedia resources, while verbal/analytic learners may prefer text-based modules.
- Professional Development - Workshops and seminars should be organized to make prospective teachers aware of their own learning styles and to help them design student-centered teaching strategies that embrace learner diversity.
- Classroom Practice Teaching (Internship) - During practice teaching, prospective teachers should be encouraged to experiment with varied pedagogical approaches, ensuring they can cater to learners with diverse cognitive styles in real classrooms.

9. Conclusion

The present study explored the cognitive styles of prospective teachers in Tiruvallur district and highlighted the diversity of their learning and thinking preferences. The findings revealed that prospective teachers do not confirm to a single pattern of cognition; rather, they display a mix of field-dependent/holistic and field-independent/analytic orientations. This diversity reflects the varied socio-cultural, institutional, and academic backgrounds of teacher trainees in the district. Importantly, the study reinforced that cognitive styles significantly influence how prospective teachers approach problem-solving, classroom management, and instructional planning. Preparing teachers with awareness of their own cognitive styles will not only enhance their personal learning but also empower them to address the diverse needs of learners in future classrooms.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

10. References

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