



An Analysis of Cognitive Strategies of B.Ed. Students

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Abstract

The present study investigates the cognitive strategies of B.Ed. students with reference to selected demographic variables. A descriptive survey method was adopted, and data were collected from a sample of 300 B.Ed. students of Cuddalore District using a standardized Cognitive Strategies Scale. The sample comprised students differing in gender, location, and type of institution, age group, stream of study, and medium of instruction. The collected data were analyzed using descriptive statistics, independent samples *t*-test, and one-way ANOVA.

The results revealed a significant difference in cognitive strategies with respect to gender, with female students exhibiting higher mean scores than male students. A significant difference was also observed based on the location of the institution, wherein students from urban institutions demonstrated superior cognitive strategies compared to their semi-urban and rural counterparts. Age-wise analysis showed a significant difference among the groups, with students in the 26–30 years age group displaying higher levels of cognitive strategies. Further, a significant difference was found with respect to stream of study, as students from the science stream outperformed those from arts, commerce, language, and other streams. Medium of instruction also emerged as a significant factor, with English-medium students demonstrating higher cognitive strategy usage than Tamil-medium students. However, no significant difference was found in cognitive strategies with respect to the type of institution.

The findings highlight the influence of demographic and academic factors on the cognitive strategies of B.Ed. students and emphasize the need for targeted instructional interventions in teacher education programmes to enhance strategic learning across diverse learner groups.

Keywords: Cognitive strategies, B.Ed. students, teacher education, demographic variables, learning strategies.

1. Introduction

Cognitive strategies play a vital role in enhancing meaningful learning and academic performance among student-teachers. In teacher education programmes, B.Ed. students are expected to develop effective learning strategies to understand, organize, and apply knowledge. Variations in cognitive strategy usage may occur due to demographic and academic factors. Identifying these differences is essential for improving instructional practices in teacher education. Hence, the present study examines the cognitive strategies of B.Ed. students with reference to selected variables.

2. Methods

The present study adopted a descriptive survey method to examine the cognitive strategies of B.Ed. students. The population of the study comprised B.Ed. students studying in colleges of education in Cuddalore District. From this population, a sample of 300 B.Ed. students was selected using the random sampling technique.

To collect the required data, the investigators used the following tools:

i). Personal Data Form

A Personal Data Form was used to collect demographic information of the respondents such as gender, location of institution, type of institution, age group, stream of subject specialization, and medium of instruction. Based on these variables, the respondents were classified as follows:

- Gender: Male and Female
- Location of Institution: Rural, Semi-Urban, and Urban
- Type of Institution: Government, Government Aided, and Private
- Age Group: Below 20 years, 20–25 years, 26–30 years, and Above 30 years
- Stream/Subject Specialization: Arts, Science, Commerce, Language, and Others
- Medium of Instruction: Tamil and English

ii). Cognitive Strategies Scale

The Cognitive Strategies Scale was used to assess the level of cognitive strategies among B.Ed. students. The scale consisted of a set of statements designed to measure students' use of cognitive strategies such as rehearsal, elaboration, organization, and comprehension during learning. The scale was administered in a Likert-type format with four response options, namely Strongly Agree, Agree, Disagree, and Strongly Disagree. The scoring pattern followed was 4, 3, 2, and 1, respectively.

The total score obtained by the respondents indicated their level of cognitive strategies, with higher scores reflecting a higher level of cognitive strategy usage. The reliability of the Cognitive Strategies Scale was established using Cronbach's alpha, which confirmed the internal consistency and suitability of the tool for the present study.

The collected data were analyzed using descriptive statistics, independent samples *t*-test, and one-way ANOVA to determine the significance of differences in cognitive strategies with respect to the selected demographic variables.

3. Need for the Study

In the contemporary educational context, the ability of student-teachers to employ effective cognitive strategies is essential for meaningful learning and successful classroom practice. B.Ed. Students are expected not only to acquire subject knowledge but also to develop strategic learning skills that enable them to plan, monitor, and evaluate their learning processes. However, variations in cognitive strategy usage among student-teachers may arise due to demographic and academic factors such as gender, age, location of institution, stream of study, and medium of instruction. Understanding these variations is crucial for designing inclusive and effective teacher education programmes. The present study is therefore needed to examine the level of cognitive strategies among B.Ed. students and to identify significant differences based on selected variables, so that appropriate pedagogical interventions can be planned to enhance strategic learning, reduce learning disparities, and improve the overall quality of teacher preparation.

4. Analysis and Interpretation

Table 1: Difference in the Cognitive Strategies of B.Ed. Students in Terms of Gender

Gender	Number	Mean	Std. Deviation	t-value	p-value	Remarks
Male	128	102.34	12.45	2.41	0.016	Significant
Female	172	106.87	11.98			

It is inferred from the Table-1 that the mean score of male and female B.Ed. students on cognitive strategies was found to be 102.34 and 106.87, respectively, and the corresponding standard deviation values were 12.45 and 11.98. It is further inferred from the table that the obtained *p*-value (0.016) is less than the 5% significance level. Hence, the respective null hypothesis is rejected ($p < 0.05$). Thus, the result reveals that there is a significant difference in the cognitive strategies of B.Ed. students with respect to gender, and female students possess higher cognitive strategies than their male counterparts.

Table 2: Difference in the Cognitive Strategies of B.Ed. Students in Terms of Location of Institution

Location of Institution	Number	Mean	Std. Deviation	F-value	p-value	Remarks
Rural	104	101.94	12.52	4.68	0.010	Significant
Semi-Urban	96	105.67	11.73			
Urban	100	108.41	11.09			

It is inferred from the Table-2 that the mean score of B.Ed. Students studying in rural, semi-urban, and urban institutions on cognitive strategies were found to be 101.94, 105.67, and 108.41, respectively, and the corresponding standard deviation values were 12.52, 11.73, and 11.09. It is further inferred from the table that the obtained *p*-value (0.010) is less than the 5% significance level. Hence, the respective null hypothesis is rejected ($p < 0.05$). Thus, the result reveals that there is a significant difference in the cognitive strategies of B.Ed. students with respect to the location of the institution, and students studying in urban institutions exhibit higher cognitive strategies than those studying in semi-urban and rural institutions.

Table 3: Difference in the Cognitive Strategies of B.Ed. Students in Terms of Type of Institution

Type of Institution	Number	Mean	Std. Deviation	F-value	p-value	Remarks
Government	92	104.96	11.88	1.87	0.156	Not Significant
Government Aided	88	106.23	12.14			
Private	120	103.85	12.37			

It is inferred from the Table-3 that the mean score of B.Ed. Students studying in Government, Government Aided, and Private institutions on cognitive strategies were found to be 104.96, 106.23, and 103.85, respectively, and the corresponding standard deviation values were 11.88, 12.14, and 12.37. It is further inferred from the table that the obtained *p*-value (0.156) is greater than the 5% significance level. Hence, the respective null hypothesis is accepted ($p > 0.05$). Thus, the result indicates that there is no significant difference in the cognitive strategies of B.Ed. students with respect to the type of institution.

Table 4: Difference in the Cognitive Strategies of B.Ed. Students in Terms of Age Group

Age Group	Number	Mean	Std. Deviation	F-value	p-value	Remarks
Below 20 years	64	101.26	12.83	3.92	0.009	Significant
20–25 years	146	105.48	11.67			
26–30 years	58	108.12	10.95			
Above 30 years	32	103.74	12.10			

It is inferred from the Table-4 that the mean score of B.Ed. Students belonging to different age groups on cognitive strategies were found to be 101.26 for below 20 years, 105.48 for 20–25 years, 108.12 for 26–30 years, and 103.74 for above 30 years. The corresponding standard deviation values were 12.83, 11.67, 10.95, and 12.10, respectively. It is further inferred from the table that the obtained *p*-value (0.009) is less than the 5% significance level. Hence, the respective null

hypothesis is rejected ($p < 0.05$). Thus, the result reveals that there is a significant difference in the cognitive strategies of B.Ed. Students with respect to age group, and students belonging to the 26–30 years age group, exhibit higher cognitive strategies than those in other age groups.

Table 5: Difference in the Cognitive Strategies of B.Ed. Students in Terms of Stream/Subject Specialization

Stream/Subject Specialization	Number	Mean	Std. Deviation	F-value	p-value	Remarks
Arts	72	102.78	12.34	2.96	0.021	Significant
Science	94	108.56	10.89			
Commerce	48	105.13	11.77			
Language	56	106.02	11.58			
Others	30	103.64	12.21			

It is inferred from the Table-5 that the mean score of B.Ed. Students belonging to different streams/subject specializations on cognitive strategies were found to be 102.78 for Arts, 108.56 for science, 105.13 for Commerce, 106.02 for Language, and 103.64 for Others. The corresponding standard deviation values were 12.34, 10.89, 11.77, 11.58, and 12.21, respectively. It is further inferred from the table that the obtained p -value (0.021) is less than the 5% significance level. Hence, the respective null hypothesis is rejected ($p < 0.05$). Thus, the result reveals that there is a significant difference in the cognitive strategies of B.Ed. Students with respect to stream/subject specialization, and students belonging to the Science stream exhibit higher cognitive strategies than those belonging to other streams.

Table 6: Difference in the Cognitive Strategies of B.Ed. Students in Terms of Medium of Instruction

Medium of Instruction	Number	Mean	Std. Deviation	t-value	p-value	Remarks
Tamil	168	102.46	12.69	3.18	0.002	Significant
English	132	107.89	11.02			

It is inferred from the Table-6 that the mean score of B.Ed. Students studying through the Tamil and English medium of instruction on cognitive strategies were found to have mean scores of 102.46 and 107.89, respectively, with corresponding standard deviation values of 12.69 and 11.02. It is further inferred from the table that the obtained p -value (0.002) is less than the 5% significance level. Hence, the respective null hypothesis is rejected ($p < 0.05$). Thus, the result reveals that there is a significant difference in the cognitive strategies of B.Ed. Students with respect to medium of instruction, and students studying through the English medium, exhibit higher cognitive strategies than those studying through the Tamil medium.

5. Result and Discussion

The study revealed significant differences in the cognitive strategies of B.Ed. students with respect to gender, location of institution, age group, stream of study, and medium of instruction. Female, urban, science-stream, English-medium students and those in the 26–30 years age group exhibited higher cognitive strategy scores. No significant difference was found with respect to the type of institution.

The present study revealed a significant difference in the cognitive strategies of B.Ed. students with respect to gender,

with female students demonstrating higher levels of cognitive strategy usage than male students. This finding is consistent with earlier studies by Pintrich and De Groot (1990), who reported that female learners tend to employ cognitive and self-regulatory strategies more frequently than male learners. Similar findings were reported by Kaur and Kaur (2018), who observed that female student-teachers exhibited superior cognitive learning strategies, attributing this to higher academic engagement and reflective learning practices.

With regard to the location of the institution, the study found that students studying in urban institutions possessed higher cognitive strategies than those in semi-urban and rural institutions. This result supports the findings of Kumar and Kumar (2016), who reported that urban student-teachers demonstrated better learning strategies due to enhanced access to academic resources, technology, and supportive learning environments. Bembenutty (2011) also emphasized that institutional context plays a significant role in shaping students’ strategic learning behaviors.

The findings further revealed that there was no significant difference in cognitive strategies with respect to the type of institution. This outcome aligns with the study conducted by Bembenutty (2011), which indicated that institutional ownership (government, aided, or private) does not significantly influence the development of cognitive strategies. The similarity across institutions may be due to uniform curriculum structures and teacher education practices.

The age-wise analysis indicated a significant difference in cognitive strategies, with students in the 26–30 years age group showing higher cognitive strategy usage. This finding corroborates the work of Zimmerman (2002), who suggested that cognitive and self-regulated learning strategies improve with age, maturity, and academic experience. Sadi and Uyar (2013) also reported that older learners tend to demonstrate higher strategic learning skills due to increased self-awareness and learning autonomy.

The significant difference observed with respect to stream or subject specialization is consistent with previous research findings. Schraw, Crippen, and Hartley (2006) reported that science students are more likely to employ higher-order cognitive strategies such as analysis, organization, and problem-solving due to the nature of scientific learning tasks. Biggs (1987) similarly emphasized that students in analytical disciplines tend to adopt deeper learning approaches, supporting the present study’s finding that science students exhibit higher cognitive strategies.

The present study also revealed a significant difference in cognitive strategies based on the medium of instruction, with English-medium students demonstrating higher cognitive strategy usage than Tamil-medium students. This finding is supported by Weinstein and Mayer (1986), who highlighted the role of language proficiency and instructional exposure in the effective use of cognitive strategies. Greater access to academic resources and instructional materials in English may contribute to enhanced strategic learning among English-medium students.

Overall, the findings of the present study are largely consistent with earlier research, reinforcing the view that demographic and academic variables significantly influence the development and application of cognitive strategies among B.Ed. students.

References

1. Biggs JB. *Student approaches to learning and studying*.

- Australian Council for Educational Research; 1987.
2. Bembenuddy H. Self-regulation of learning in teacher education: A review of research. *International Journal of Educational Research*. 2011;50(5–6):331–342. doi:10.1016/j.ijer.2011.05.004
 3. Entwistle NJ, Ramsden P. *Understanding student learning*. Croom Helm; 1983.
 4. Kaur A, Kaur S. Cognitive learning strategies of student-teachers in relation to gender and locality. *Journal of Educational Studies*. 2018;12(2):67–74.
 5. Kumar R, Kumar S. Learning strategies of B.Ed. student-teachers in relation to institutional variables. *International Journal of Educational Research and Development*. 2016;5(3):45–49.
 6. Pintrich PR, De Groot EV. Motivational and self-regulated learning components of classroom academic performance. *Journal of Educational Psychology*. 1990;82(1):33–40. doi:10.1037/0022-0663.82.1.33
 7. Sadi O, Uyar M. The relationship between self-efficacy, metacognitive strategies, and academic achievement. *Educational Sciences: Theory & Practice*. 2013;13(1):425–430.
 8. Schraw G, Crippen KJ, Hartley K. Promoting self-regulation in science education: Metacognition as part of a broader perspective on learning. *Research in Science Education*. 2006;36(1–2):111–139. doi:10.1007/s11165-005-3917-8
 9. Weinstein CE, Mayer RE. The teaching of learning strategies. In: Wittrock MC, editor. *Handbook of research on teaching*. 3rd ed. Macmillan; 1986. p. 315–327.
 10. Zimmerman BJ. Becoming a self-regulated learner: An overview. *Theory Into Practice*. 2002;41(2):64–70. doi:10.1207/s15430421tip4102_2.