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Cognitive styles in relation to problem solving ability among B.Ed. student teachers

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Abstract
Present study was conducted on 210 student teachers in Karnataka. Sample was selected by using random sampling method. Out of sample of 210 student teachers, it was divided into 110 female student teachers and 100 male student teachers. Finding of the study are 1). There exists a significant positive relationship between S (systematic) cognitive style and problem solving ability whereas no significant relationship was found between I (intuitive) cognitive style and problem solving ability of student teachers. 2). There exists a significant positive relationship between S (systematic) cognitive style and problem solving ability whereas no significant relationship was found between I (intuitive) cognitive style and problem solving ability of male student teachers. 3). There exists a significant positive relationship between both S (systematic) and I (intuitive) cognitive styles and problem solving ability of female student teachers. 4). There exists a significant positive relationship between both S (systematic) and I (intuitive) cognitive styles and problem solving ability of science stream student teachers. 5). There exists a significant positive relationship between S (systematic) cognitive style and problem solving ability whereas no significant relationship was found between I (intuitive) cognitive style and problem solving ability of Arts strea student teachers.

Keywords: cognitive styles, problem solving

Introduction
Learning is an action that "happens" in the brain. The brain is enclosed within the cranial cavity, or skull. The nervous system is the most essential organisation that regulates the activity of both animals and humans. The CNS (Central Nervous System) is made up of the brain and the spinal cord. The CNC is divided into two lateral parts, one of which is the mirror image of the other. Because the mind plays a flexible role in achieving a variety of activities, most people are relatively flexible in their styles and try to adjust themselves to the stylistic demand according to the scenario to varied degrees. It is therefore the responsibility of parents and instructors to understand the structure of people minds and how they function in different styles of learning. Each individual likes his or her own way of organising all that he or she sees, remembers, and thinks about. Cognitive style refers to consistent individual variances in how information and experience are organised and processed.

Cognitive Style
The habitual pattern or preferred way of doing something (thinking, learning and teaching) that is consistent over long periods of time is the 'style' of individual (Kazadin, 2010). Arthur Beber's Dictionary of Psychology (2001) states that, 'Cognitive style is the style or manner in which cognitive tasks are approached of handled". There are different Cognitive styles Systematic Style, Intuitive Style, Integrated Style, Undifferentiated Style and Split Style.

Problem Solving
Problem solving in an individual phenomenon and involves the exercise of cognitive abilities of high order and continuous and persistent struggling on the conscious as well as unconscious levels. From birth onwards, everybody in this world is beset with some problem or the other. The productive work involved in the evaluation of the situation and the strategy workout to reach one's set goals is collectively termed problem solving (Shaveta & Sangeeta sood)

A. Cognitive style: In the present study the tool used for cognitive style inventory (CSI) was developed by Dr. Praveen Kumar Jha. According to this test CSI is a self-report measure of the way of thinking, judging, remembering, storing information, decision making and believing in interpersonal relationship.

1. **Systematic Style:** When tackling an issue, an individual who operates with a systematic style takes a well-defined step-by-step approach; looks for an overall method or pragmatic approach; and then creates an overall plan for fixing the problem.
2. **Intuitive Style:** When solving a problem, the intuitive person employs an unpredictable sequencing of analytical stages, relies on experience patterns typified by universalized areas or hunches, and quickly investigates and abandons alternatives.

B. Problem Solving: In this present study tool used for assessing problem solving ability, Problem Solving Ability to L.N. Dubey, Problem solving is the framework or pattern that allows for innovative thinking and reasoning. It is the ability to think and reason at various levels of complication. Persons who have mastered effective problem-solving skills can solve problems of greater complexity than more brilliant people who have not received such training.

Cognitive style is the most common illustration of how an individual interacts to their surroundings (Ates & Cataloglu, 2004). Cognitive style is just the control procedure that is developed, transient, a situationally determined cautious movement that a student utilises to shape and regulate, obtain and process information for their final year project. Studies on cognitive style have revealed that people do not

tackle logical tasks in the same way. M.N. Musya (2015); A. Bakanov and M. Zelenova (2015).

Both cognitive style and problem-solving abilities have a broad range. Its understanding is equally valuable to the teacher, final-year students, and parents. In a final year project, cognitive style is the technique chosen to solving an issue using problem solving skills. Cognitive styles and problem-solving abilities have a significant impact on a student's final year project success. The final year student requires self-thinking in order to solve several complex difficulties in the final year assignment. In order to solve complex problems, final-year students must have higher-level thinking and reasoning skills. Indeed, many of the world's most significant contributions have resulted through perceptive and purposeful problemsolving. Wittrock and Mayer (2006). Problem-solving is cognitive processing aimed at obtaining a goal when no clear solution approach is available to the problem solver (Córdova, at el) (2015). Cognitive styles and problem-solving are the frameworks through which innovative thinking and thinking occur in the professional courses. It is a technique for removing impediments to the completion of a internship programme; one of the true tasks of education is to develop the cognitive styles and problem-solving abilities of the student teachrs.

Objectives of the Study

The study was conducted by keeping the following objectives.

1. To study the relationship between Cognitive Styles and Problem Solving ability among B.Ed. Student teachers.
2. To study the relationship between Cognitive Styles and Problem Solving ability of Female B.Ed. Student teachers.
3. To study the relationship between Cognitive Styles and Problem Solving ability of Male B.Ed. Student teachers.
4. To study the relationship between Cognitive Styles and Problem Solving ability of Arts stream B.Ed. Student teachers.
5. To study the relationship between Cognitive Styles and Problem Solving ability of Science stream B.Ed. Student teachers.

Hypotheses of the Study

The following hypotheses were formulated for the verification in present investigation.

1. There exists no significant relationship between Cognitive Styles and Problem Solving ability among B.Ed. Student Teachers.
2. There exists no significant relationship between Cognitive Styles and Problem Solving ability among Female B.Ed. Student Teachers.
3. There exists no significant relationship between Cognitive Styles and Problem Solving ability among Male B.Ed. Student Teachers.
4. There exists no significant relationship between Cognitive Styles and Problem Solving ability among Arts stream B.Ed. Student Teachers.
5. There exists no significant relationship between Cognitive Styles and Problem Solving ability among Science stream B.Ed. Student Teachers.

Methodology

It is important that anything to be done properly must be planned before start. This helps the researcher to proceed directly without confusing with the inconvenient events. This part of the proposal outlines the entire research plan. It describes just what must be done, how it will be done, what data will be needed and what data will be selected and how all the data will be analyzed. The random sampling method was used to study the problem from B.Ed. student teachers across the Karnataka.

Sample of the Study

The total sample for the study comprises of 210 B.Ed. student teachers from different management colleges across the Karnataka.

Tools Used In This Study

In the present study researcher used the following tools to collect the data.

1. Cognitive Style Inventory (CSI) By Dr. Parveen Kumar Jha.
2. Problem Solving Ability Test (PSAT) By L.N. Dubey.

Analysis and Interpretation of Data

Table 1: Coefficient of Correlation between Cognitive Styles and Problem Solving Ability of B.Ed. Student Teachers.

Cognitive Styles	N	R
S Style	210	0.64**
I Style	210	0.11

** Significant at 0.01 level

Table-1 shows the coefficient of correlation between S cognitive style and problem solving ability of B.Ed. student teachers as 0.64 which is significant at 0.01 level of confidence and that of I cognitive style and problem solving ability of B.Ed. student teachers as 0.11 which is not significant at 0.05 level of confidence which shows that there exists a significant positive relationship between S (Systematic) cognitive style and problem solving ability whereas no significant relationship was found between I (intuitive) cognitive style and problem solving ability of B.Ed. student teachers.

Table 2: Coefficient of Correlation between Cognitive Styles and Problem Solving Ability of Male B.Ed. Student Teachers.

Cognitive Styles	N	R
S Style	100	0.52**
I Style	100	0.09

** Significant at 0.01 level

Table-2 shows the coefficient of correlation between S cognitive style and problem solving ability of Male B.Ed. student teachers as 0.52 which is significant at 0.01 level of confidence and that of I cognitive style and problem solving ability of Male B.Ed. student teachers as 0.09 which is not significant at 0.05 level of confidence which shows that there exists a significant positive relationship between S (Systematic) cognitive style and problem solving ability whereas no significant relationship was found between I (intuitive) cognitive style and problem solving ability of Male B.Ed. student teachers. The similar result was found by shaveta & sangeet.

Table 3: Coefficient of Correlation between Cognitive Styles and Problem Solving Ability of female B.Ed. Student Teachers.

Cognitive Styles	N	R
S Style	110	0.63**
I Style	110	0.34*

** Significant at 0.01 level
* Significant at 0.05 level

Table-2 shows the coefficient of correlation between S cognitive style and problem solving ability of female B.Ed. student teachers as 0.63 which is significant at 0.01 level of confidence and that of I cognitive style and problem solving ability of female B.Ed. student teachers as 0.34 which is also significant at 0.05 level of confidence which shows that there exists a significant positive relationship between S (Systematic) and I (intuitive) cognitive style and problem solving ability of female B.Ed. student teachers.

Table 4: Coefficient of Correlation between Cognitive Styles and Problem Solving Ability of Arts stream B.Ed. Student Teachers.

Cognitive Styles	N	R
S Style	105	0.34*
I Style	105	0.08

** Significant at 0.01 level

Table-4 shows the coefficient of correlation between S cognitive style and problem solving ability of Arts stream B.Ed. student teachers as 0.34 which is significant at 0.05 level of confidence and that of I cognitive style and problem solving ability of Arts stream B.Ed. student teachers as 0.08 which is not significant at 0.05 level of confidence which shows that there exists a significant positive relationship between S (Systematic) cognitive style and problem solving ability whereas no significant relationship was found between I (intuitive) cognitive style and problem solving ability of Arts stream B.Ed. student teachers.

Table 5: Coefficient of Correlation between Cognitive Styles and Problem Solving Ability of Science stream B.Ed. Student Teachers.

Cognitive Styles	N	R
S Style	105	0.57**
I Style	105	0.31*

** Significant at 0.01 level
* Significant at 0.05 level

Table-5 shows the coefficient of correlation between S cognitive style and problem solving ability of Science stream B.Ed. student teachers as 0.57 which is significant at 0.01 level of confidence and that of I cognitive style and problem solving ability of Science stream B.Ed. student teachers as 0.31 which is also significant at 0.05 level of confidence which shows that there exists a significant positive relationship between S (Systematic) and I (intuitive) cognitive style and problem solving ability of Science stream B.Ed. student teachers.

Discussion

Problem-solving is an essential part of life. Problem-solving discussion of cognitive processing aimed at determining how to achieve a goal. An issue arises when a person desires a goal but does not instantly know what activities to take to achieve that goal. Thus, a difficulty arises when a person is confronted with an obstacle that must be overcome in order to reach a goal. P.C. Mefoh *et al* (2017). Solving an issue necessitates the solver engaging in cognitive processes such as thinking, determining, reasoning, interpreting the problem's language, and recalling information held in memory. Cognitive style is an important factor that can influence problem solving. Cognitive style refers to an individual's preferred method of processing information. (Jena, 2014) [6] Depending on the outcome, it can be advised that more research into the effect of cognitive style on problem-solving abilities be undertaken in order to determine the impact of cognitive styles and problem-solving skills that are required for student teachers. According to the findings of the study, the majority of student teachers are reliant learners, therefore their problem-solving abilities tend to improve.

Recommendations

1. B.Ed. College faculties should aim to include student teachers by providing them various creative tasks connected to new educational concepts, so that they can bring new ideas into their tasks and perform effectively and solve difficulties.
2. B.Ed. College faculties should allow student teachers to practice best teaching methods and support problem-solving strategies. They should provide the personalised attention, which will help them discover their secret problem-solving and reasoning ability.
3. There is a need to provide adequate training and support to student teachers in order to improve their problem-solving abilities.
4. The government should also strengthen policies, plans, and actions to increase educational quality.
5. With well-guided instructions and scaffolding tasks, a variety of learning content presentation techniques addressing learners' diverse cognitive styles (i.e., images, video, audio, interactive exercises, etc.) should be used.

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