

Influence of Gender, Management and Locality of Schools on the Thinking Styles of Secondary School Students in Bihar

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ABSTRACT

The influence of gender, management category of schools and locality of schools on the thinking styles as defined by the mental self-government theory of Sternberg (1997) was studied. A Thinking Styles Test Battery (TSTB) was developed and administered among 486 secondary school students (228 boys and 258 girls) studying in 9th standard randomly selected from 13 schools among six districts in Bihar State. It was found that gender is influencing internal, liberal and conservative thinking styles. Boys are found to be highly internal and liberal than girls and girls are high in their conservative thinking style characteristics. It was also revealed that management category of the student's schools is also influencing some thinking styles. Students studying in aided schools are significantly high in their monarchic, hierarchic and internal thinking styles whereas students studying in government schools are high in their executive thinking styles. Locality of the schools is also found to be influencing the thinking styles of students. Urban pupils have significantly high legislative thinking style and rural pupil have significantly high judicial and monarchic thinking styles.

I. INTRODUCTION

Individual difference in human performance is an important area of interest in behavioral science. Intelligence, personality etc. are some of the constructs developed for explaining individual differences. When they gave only a partial answer to the question of individual differences in performance, some interfaces between these constructs were developed.

The notion of styles developed after 1950's is one among the attempts to describe individual differences using some interfaces between intelligence and personality (Sternberg, 1997; Sternberg and Zhang, 2001). Generally, styles are

classified as cognitive styles, learning styles and thinking styles (Sternberg and Zhang, 2009). Cognitive styles are the ways of organizing information. Learning styles are about the ways of learning something and thinking styles describe how one prefers to think.

Our abilities do not completely explain our performance in different situations. Individuals with equal abilities need not necessarily perform similarly in a given situation. These differences are due to the variation in using the abilities one possesses. People like to use their abilities in different ways in different situations. Thinking styles are the preferred way of using abilities (Sternberg, 1997). While abilities describe what one can do, thinking styles show how one likes to use the abilities. Sternberg, in his theory (mental self-government theory of thinking styles), postulated a profile of 13 dimensions of thinking styles under five categories.

Like the organization of governments in modern human society, according to this theory, individual's mental self-government of thinking styles also has some functions (legislative, judicial and executive), forms (monarchic, hierarchic, oligarchic and anarchic), levels (global and local), scope (internal and external) and leanings (liberal and conservative).

People with legislative thinking style prefer to create, design and invent things. Judging, evaluating and analyzing of things and processes are the preferences of judicial people. Executives follow and obey rules and regulations and implement things and procedures developed by others. Monarchic individuals have one goal at a given time and devote fully for its attainment disregarding the obstacles. Both hierarchic and oligarchic people have more than one goal at a time. A hierarchic person, realising the impossibility of achieving all goals at a time, prioritise their goals and strives for the attainment of the goals in the

order of priority; but the oligarchic people attend all their goals at a time without any prioritisation. Anarchic individuals have a large number of attainable and unattainable goals and attempts to achieve all of them without any order or regularity. While a global person sees the whole picture and abstractness of the things and problems, local people generally see the details, specifics and concrete matters. People with internal thinking styles are work oriented and prefer to do things alone. But external people are more people oriented and outgoing with preferences for working with others. Liberal people prefer change. They seek unfamiliar situations and defy conventions. Whereas conservative people like to follow conventions and avoid unfamiliar situations.

No styles are good or bad. We possess all styles and differences in degrees and not in type. We do not have a single style, but a profile of styles of different dimensions in varying degrees at a given period of time. This may change with the changes in the tasks, situations and groups with which one is engaged. Thinking style of an individual changes also with time, age and experience. Thinking styles are sociable and hence learnable. They can be developed by practice. It is a broad intellectual construct and applies to both academic and non-academic settings.

The profile of 13 dimensions of thinking styles was grouped into three types (Zhang and Sternberg 2005, 2006). Type I thinking styles are the ones that tend to be more creativity generating and that denote higher levels of cognitive complexity, including the legislative (being creative), judicial (evaluative of other people and products), hierarchical (prioritising one's tasks), global (focusing on the holistic picture), and liberal (taking a new approach to tasks) styles. Type II thinking styles are styles that suggest a norm-favouring tendency and that denote lower levels of cognitive complexity, including the executive (implementing tasks with given orders), local (focusing on details), monarchic (working on one task at a time), and conservative (using traditional approach to tasks) styles. The anarchic (working on whatever task that comes along), oligarchic (working on multiple tasks without priority), internal (working on one's own), and external (working with others) styles are Type III styles. They may manifest the characteristics of the styles from Type I and Type II groups, depending on the stylistic demands of a specific task.

Influence of gender, age, SES and other demographic variables on thinking styles among different groups of subjects was repeatedly proved in

the reviewed studies. But the literature doesn't provide a uniform picture on the existence of a particular style or a profile of styles among people with particular demographic variables. They rather present mixed results about the influence of different demographic variables on thinking styles. Reviewed studies provided different results about the influence of various demographic variables such as gender, institution type and locality on thinking styles. The questions like whether gender is influencing thinking styles, whether boys and girls differ significantly in their thinking styles, which institutional group is good/bad for different dimensions of thinking styles, whether the locality of institutions are influencing the thinking styles of students studying in these institutions are needed to be explored further and answered clearly. The present study is an attempt in this direction. It tries to measure the thinking styles of secondary school pupils in the state and to analyse the influence of gender, management category of schools and locality of schools on the thinking styles of secondary school students.

Further, many academic problems faced by the students in Indian context are not satisfactorily explained by the constructs of abilities or intelligence. There are literally as many ways of thinking as there are people in the world. Students come to the classrooms with a lot of creative ideas. But they are forced and learn to hide or suppress their creative ideas. Sometimes it makes so many punishments to make the children do what they are told to do. Those who are not learned to suppress are considered as having behavior problems, annoyances or even anti-social. It is not possible for the teacher in the present system even to tolerate them though not appreciate their creativity. Teaching and learning process in our classrooms mostly depends on remembrance of facts and figures in the order given in the textbooks. Few pupils with certain thinking preferences get advantage out of this and others are considered as dull. Undue importance is given to verbal factors as teaching and learning is considered only as lecturing and note taking. Those with other thinking style preferences suffer and are thrown out of the process. Teachers almost invariably teach and assess students in ways that benefit those with certain styles of thinking and learning but place many others at marked disadvantage. Schools and other institutions value certain ways of thinking than others. People whose ways of thinking do not match those valued by the institutions are usually penalized. So, the investigator felt that it is a need to analyze the thinking styles of secondary school pupils of Bihar state in India and find out whether

gender, management category of schools or locality of schools are influencing their thinking styles.

II. REVIEW OF LITERATURE

Cillers (2001) found significant gender difference only in one out of thirteen thinking styles; females showed significantly stronger preference for executive thinking style. But a large number of studies indicated the influence of different demographic variables such as sex, age, SES etc. on thinking styles. Sternberg and Gregorenko (1995) indicated significant relationship between students learning styles and such demographic data as student's SES and birth order. Participants with higher SES tended to score high on legislative style and less judicial. Participants who were later-born in their families scored higher on the legislative style than the earlier-born.

Students tend to match their teachers though not their school in style. Verma (2001) noted that female college students have greater inclination towards the use of legislative and executive thinking styles whereas male students had tendency to adopt monarchic thinking styles. Rural urban differences on thinking styles are almost negligible. Zhang and Sachs (1997) found that male students scored significantly higher in global thinking styles. Results of a study conducted by Zhang and Sternberg (1998) suggested that students' thinking styles are statistically different based on such variables as age, sex, college class, teaching experience, college major, school subject taught, and travel experience. Male participants scored higher on global thinking styles than did their female counterparts. Participants who had had more teaching experience and those who had had more travel experience scored higher on the creativity promoting thinking styles such as legislative and liberal. Zhang (2000) reported that the social and enterprising type of people tended to use the external thinking style, but not the internal thinking style. The artistic type of people tended not to use thinking styles that require conformity. Verma and Monica (2006) found that gender had significant influence on Executive, anarchic and external thinking styles.

Gregorenko and Sternberg (1997) found that certain thinking styles contribute significantly to the prediction of academic performance over and above prediction of scores on ability tests and Zhicheng and Stephen (1997) substantiated Sternberg's claim that styles contribute to achievement beyond what can be expected by students' intelligence. Zabukovec and Kobal-Grum (1994) recommended educational process

which enhances different thinking styles for the development of more flexible problem solving. Knowledge of the pattern of thinking styles among different sex, age, locality, subject and institutional groups will help in planning the development of these thinking styles among the respected groups. Development of the required thinking style dimensions in required groups is supposed to make the educational practice more effective for them.

The presence of thinking styles and the influence of sex, age, SES and other demographic variables on thinking styles among different group of subjects were repeatedly proved in the reviewed studies. But the literature doesn't provide a uniform picture on the existence of a particular style or a profile of styles in a particular group of subjects. They also present only rather mixed result about the influence of different demographic variables on thinking styles.

Objective of the Study

1. To test whether significant difference exist between the mean thinking style scores of boys and girls studying in the secondary schools in Bihar state.
2. To test whether significant difference exist between the mean thinking style scores of secondary school students studying in government and aided schools in Bihar state.
3. To test whether significant difference exist between the mean thinking style scores of secondary school students studying in the schools situated in rural and urban areas in Bihar state.

III. METHODOLOGY

Tools Used

The study was conducted by administering the Thinking Styles Test Battery (TSTB) (Naseema and Ramakrishnan, 2006) and a General Data Sheet designed for the purpose.

Thinking Styles Test Battery (TSTB) was designed, developed and standardized for the measurement of thinking styles of secondary school pupils in Bihar state. It was developed on the basis of the mental self-government theory of thinking styles by

Sternberg (1997). TSTB contains a battery of four tests designed for group administration. Test I measure the legislative, judicial and executive thinking styles. Test II measures the monarchic, hierarchic, oligarchic, anarchic, internal and external thinking styles. Test III measures the global and local thinking styles and Test IV liberal and conservative styles.

Sample

The study was conducted on a sample of 486 secondary school students studying in IXth standard randomly selected from 13 schools among six districts in Bihar State. The sample consists 228 boys and 258 girls. It includes 325 students from government schools, 161 from aided schools, 265 from urban area and 221 students from schools situated in rural areas. Among the total, 105 samples are from Kasaragod district, 87 samples are from Malappuram district, 83 samples are from Trissur district, 62 samples are from Kottayam district, 73 samples are from Alappuzha district and 76 samples are from Thiruvananthapuram district.

Data from a total of 486 secondary school pupils all studying in co-educational schools were used for the present study.

Collection of Data

Thinking styles of respondents were measured by calculating the level of thinking style characteristics present among them. For this purpose, Thinking Styles Test Battery (TSTB) was administered among the selected sample by the investigator. Students possessing high levels of various dimensions of thinking styles were calculated for the whole sample and the subsamples based on gender, management category of schools and locality of schools. Results are given in Table 1.

Table 1: Percentage of Students Possessing High Levels of Thinking Styles

Thinking Styles	Percentage of Students							
		Whole sample	Boys	Girls	Govt.	Aided	Urban	Rural
	N	486	228	258	325	161	265	221
Legislative		54.7	56.6	53.1	54.5	55.3	59.2	63.8
Judicial		55.8	55.7	55.8	54.8	57.8	53.2	58.8
Executive		57.6	57.0	58.1	60.0	52.8	53.2	62.9
Monarchic		52.5	53.5	47.7	61.5	50.9	57.4	59.3
Hierarchic		56.8	51.3	53.5	54.2	50.3	52.5	52.9
Oligarchic		53.9	55.3	52.7	51.1	59.6	54.7	52.9
Anarchic		55.1	54.0	56.2	54.1	50.3	53.2	57.5
Internal		55.3	55.3	57.8	56.6	55.3	50.2	54.8
External		51.4	57.9	53.5	52.3	55.3	50.6	52.5
Global		52.9	63.6	56.6	56.0	64.6	52.8	52.9
Local		56.0	50.0	53.5	54.8	51.6	55.5	56.6
Liberal		63.6	57.9	58.1	63.4	53.4	52.5	60.6
Conservative		62.8	55.7	56.6	51.1	59.6	63.4	50.7

On the basis of the percentage of students possessing high level of various dimensions of thinking styles, it was revealed that 54.7 percentage of the students are legislative, 55.8 percentage judicial, 57.6 percentage executive, 52.5 percentage monarchic, 56.8 percentage hierarchic, 53.9 percentage oligarchic, 55.1 percentage anarchic, 55.3 percentage internal, 51.4 percentage external, 52.9 percentage global, 56.0 percentage local, 63.6 percentage liberal and 62.8 percentage conservative. The percentage of students possessing the characteristics of various dimensions of thinking styles among the subsamples based on gender, management category of schools, and locality of schools are also similar with the presence of these characteristics among the total sample. Primarily, it shows the existence of various thinking style characteristics among these secondary school students in Bihar.

Statistical Techniques

Using computer software, the entered data were classified into various groups and sub-groups; measures of central tendencies, dispersions and percentages were estimated and subjected to necessary statistical tests. Mean scores of thinking styles were compared between the subsamples of boys and girls, between government and aided school students and between urban and rural school students using the test of significance of difference between mean for large independent sample. CRs were interpreted using the two-tailed tests of significance.

IV. RESULTS AND DISCUSSIONS

Results of the test of significance of difference between mean thinking style scores among subsamples based on gender, management type and locality are given in Table 2.

Discussion

Test of significance of difference between the mean thinking stylescores of boys and girls revealed that boys are significantly highlyinternal (0.05 level) and highly liberal (0.01 level) than girls whereasgirls are significantly highly conservative than boys. Individualswith internal thinking style are aloof; work oriented and prefersto do things individually. So, it may be concluded that boys aremore inward and work oriented than girls. As boys are also foundto be

significantly more liberal than girls, they prefer to overtakeconventions, seek new and challenging situations more than girls asthese are the characteristics liberal thinking style. Characteristics ofconservative people are that they like existing rules and procedures,familiar situations and dislike change. As girls show conservativethinking style tendencies than boys, it is concluded that girls tryto avoid changes, ambiguous situations and adhere to existing rulesand procedures than boys.

Table 2: Summary of the Test of Significance of Difference between MeanThinking Style Scores among Subsamples

Thinking Styles	Mean and Critical Ratio								
	Between Boys and Girls			Between Govt. and Aided			Between Rural and Urban		
	M1	M2	CR	M1	M2	CR	M1	M2	CR
Legislative	10.80	10.89	0.333	10.78	10.98	0.672	11.14	10.50	2.282*
Judicial	9.89	9.71	0.806	9.66	10.07	1.779	09.58	10.05	2.179*
Executive	9.20	9.34	0.486	9.50	8.83	2.235*	09.20	9.36	0.588
Monarchic	19.13	18.68	0.988	18.42	19.84	2.935**	18.40	19.48	2.447*
Hierarchic	20.65	19.93	1.469	19.84	21.13	2.239*	19.88	20.73	1.796
Oligarchic	18.08	17.93	0.376	17.89	18.24	0.846	17.87	18.16	0.742
Anarchic	16.02	16.67	1.537	16.19	16.73	1.134	16.05	16.75	1.645
Internal	16.01	15.13	2.146*	15.05	16.55	3.239**	15.27	15.87	1.463
External	20.98	21.19	0.525	21.25	20.78	1.023	21.02	21.18	0.415
Global	15.97	16.40	1.208	16.24	16.12	0.294	16.13	16.28	0.429
Local	13.77	13.44	0.971	13.63	13.52	0.314	13.70	13.47	0.682
Liberal	13.09	12.03	3.610**	12.43	12.72	0.926	12.71	12.31	1.352
Conservative	16.66	17.74	3.620**	17.33	17.05	0.899	17.13	17.37	0.790

** indicates significance at 0.01 level * indicates significance at 0.05 level

It was also found that government school students aresignificantly (0.05 level) more executive than the aided schoolstudents. So, it is derived that government school students prefersto obey directions, like pre-structured and pre-fabricated problemsand follow rules (characteristics of executive thinking style) thanaided school students. Aided school students are significantly moremonarchic (0.01 level), hierarchic (0.05 level) and internal (0.01level) than the government school students. It indicates aided schoolstudents prefer to do one work at a given time and concentrate theirmaximum attention on its completion before beginning another work(characteristics of monarchic thinking style), recognizes the needto priorities their goals and works at a given time (characteristicsof hierarchic thinking style) and more aloof and work oriented(characteristics of internal thinking style) than government schoolstudents.

When the mean thinking style scores of urban and ruralschool students compared, urban

school pupils were found to besignificantly (0.01 level) highly legislative than rural school students.So, the urban school students prefer to come up with their own ideas,take decisions for themselves and create their own rules than ruralschool students (characteristics of legislative thinking style). Ruralschool students are highly judicial (0.05 level) and monarchic (0.01level) than urban schoolstudents. It shows rural school studentsprefers judgment and evaluation of things and events and analysisof problems (characteristics of judicial thinking style) and entertainone goal at a time with maximum effort before attempting another(characteristics of monarchic thinking style) than their urbancounterparts.

Results of the study indicate that gender is influencing internal,liberal and conservative thinking styles. Boys are found to be highlyinternal and liberal than girls and girls are high in their conservativethinking style characteristics. Though Cillers (2001) reportedsignificant gender difference only in one out of thirteen thinkingstyles (where

females showed significantly stronger preference for executive thinking style), the findings of the present study substantiate the findings of the previous studies (Verma, 2001; Zhang and Sachs, 1997; Zhang and Sternberg, 1998 and Verma and Monica, 2006) which indicated a significant influence of sex on different thinking styles.

Principles of growth and development indicate variation in the pattern of development among boys and girls during the period of early adolescence in which girls overtake boys both physically and mentally. Lag in the developmental advancement and resultant adolescence awkwardness of boys may be the reason for their significantly high internal thinking styles which is mainly characterized by the loneliness and the tendency to work alone. Teaching learning activities in the classrooms may help all the students develop their individual skills and group skills because both are basic life skills which are necessary for the successful participation in modern society. As boys are found to be more focused towards individual skills (like working alone) comparing the girls, necessary changes in the approaches may be made to develop all major life skills in all groups of students.

The conventional social beliefs and restrictions may prevent the girls from more social opportunities. This factor may be reflected in the high conventional thinking style scores of girls which are characterized by the tendency to stick to existing rules and procedures and familiar situations and the dislike for changes. Over domination of conservative thinking style may not be helpful for catering to the changing needs of the modern life of our future citizens. So the factors leading to the concentration of conservative thinking style in girls may be analyzed further and necessary remedial measures may be adopted for equipping the girls for a better and practical future life.

It was also found from the study that management category of the student's schools is also influencing some thinking styles. Students studying in aided schools are significantly high in their monarchic, hierarchic and internal thinking styles whereas students studying in government schools are high in their executive thinking styles. This finding substantiates the results of the study conducted by Zhang and Sternberg (1998) in which thinking styles are statistically different based on such variables as college class, experience and school subject.

Differences between government and aided schools in Bihar, their management, administration, infrastructure facilities, availability

of developmental funds, appointment of teachers, availability of permanent team of teaching staff and organization of systematic curricular and co-curricular activities may have resulted in the thinking styles of students studying in these schools. Since government and aided schools are following the same curriculum, syllabus and teaching-learning approaches and are functioning under the same department, necessary provisions may be made to avoid any difference between their functioning.

Locality of the schools is also found to be influencing thinking styles. Urban pupils have significantly high legislative thinking style and rural pupil have significantly high judicial and monarchic thinking styles. Exposure to modern standards of living facilitated by better transportation, communication and other advanced technological facilities may have helped pupils studying in urban schools to have high legislative thinking style which is the preference for their own ideas and their own ways for getting things done. The rural life, on the other hand, is not able to involve actively in the modern ways of living. They still remain mere spectators to the vast advancing world outside. This situation may be reflected in the high judicial thinking style of rural school pupils which is the tendency to judge and evaluate people, things and events.

V. CONCLUSIONS

From the results of the study, it may be concluded that gender is influencing internal, liberal and conservative thinking styles. Boys are found to be highly internal and liberal than girls and girls are high in their conservative thinking style characteristics. It was also concluded that management category of the student's schools is also influencing some thinking styles. Students studying in aided schools are significantly high in their monarchic, hierarchic and internal thinking styles whereas students studying in government schools are high in their executive thinking styles. It may also be concluded that locality of the schools is influencing the thinking styles of students. Urban pupils have significantly high legislative thinking style and rural pupil have significantly high judicial and monarchic thinking styles.

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