



RESEARCH PAPER

A Study of Thinking Styles and Instructional Practices: A Case of Secondary School Teachers in Punjab

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PAPER INFO

Received:

April 2, 2020

Accepted:

June 15, 2020

Online:

June 30, 2020

Keywords:

Thinking Style
Types,
Instructional
Practices,
Secondary School
Teachers

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ABSTRACT

The aim of the study was to identify teachers' thinking style(TS) and instructionalpractices (IP) they use at secondary school level in Punjab. The sample of the study was 441 teachers in public secondary schools of district Sialkot in Punjab. (TS) Inventory was used to collect data for the identification of (TS). The instrument used 7 point Likert scale and a formula for identification of (TS). Frequency distribution was used to analyze the data. The results revealed that the teachers in (TS) Type-1 used practices demand higher degree of freedom, whereas teachers of Type-2 used practices having low degree of freedom and Type-3 teachers used practices of both Type-1 and Type -2 teachers.The teachers of thinking style Type-1 may be assigned the subjects involving critical complex,Type-2 may be assigned the subjects involving lower degree of freedom andType-3 may be assigned the subjects involving complex and higher as well as lower degree of freedom at the same time or simultaneously.

Introduction

Role of thinking style (TS) matters in teachers' performance in the classroom. Over the years many studies have contributed in the field of styles. According to (Riding,&Cheema 1991) there are over thirty labels for the style paradigm. Sternberg (1997) integrated all the previous styles in theory of Mantle Self- Government (MSG). This theory characterized teachers into thirteen thinking styles i.e.Legislative, Judicial, Executive thinking styles are grouped as forms, Hierarchic, Monarchic, Oligarchic, Anarchic thinking styles are grouped as functions, Local, Globalthinking styles are grouped as level, Internal, External thinking styles are grouped as scopes, Liberal and Conservative (TS)are grouped as

leanings, on the bases that the individuals in a society show inclinations and preferences towards certain thinking styles in a political system. There are many ways to govern the society so in the same ways teachers manage and govern activities in the classroom. These preferences for instructional practices are thinking styles of the teachers. Thinking styles are preferences not abilities.

Instructional behaviors are specified by teaching behavior i.e. teachers' academic interactions and classroom activities take place and to understand the influence of teachers' thinking style on using instructional practices in the classroom (Sternberg, Grigorenko, & Zhang, 2008). According to (Zhang, 2001; Zhang & Sternberg, 2002; Zhang, 2006) based on (MSG) revealed that the teachers' thinking style as marked in teaching i.e. teaching style, teachers' teaching approaches that student-centered and teacher-centered were associated to their teaching style and teachers' location, gender, experience and qualification and insights of teaching atmosphere were affected by their (TS).

Zhang & Sternberg (2006) revealed that the key purpose for taking the teachers' characteristics into account is that these attributes were found to influence both thinking styles and instructional practices. It is essential to control the characteristics statistically when testing the relation between thinking style and instructional practices of the teachers in the classroom. Teaching behaviors tend to be influenced by thinking style. In thinking style in teaching inventory (TSI-R2), revised by (Sternberg, Wagner, & Zhang, 2007), revealed that teaching style can be measured that one type of teaching behavior because the TSI-R2 measures teachers' preferred ways of performing tasks and face situations in teaching-relevant activities. Thinking styles may impact the instructional practices used by the teachers in the classroom as teachers' thinking styles are guided by the teachers' beliefs (Higgins & Zhang, 2009).

Zhang & Sternberg (2006) categorized (TS) into three groups according to the complexity and degree of freedom used by the teachers. Change in thinking style may also change the style interaction of the teachers in the classroom. Legislative, Judicial, Global, Hierarchic and Liberal (TS) were grouped as Type-1. Executive, Local, Monarchic and Conservative (TS) were grouped as Type-2 and are considered norm-favoring inclination tend to involve lower level of cognitive complexity and degree of freedom. The teachers having Oligarchic, Anarchic, Internal and External thinking styles Type-3 may tend to the characteristics of Legislative, Judicial, Global, Hierarchic, Liberal, Executive, Local, Monarchic and Conservative thinking style.

Literature Review

Thinking style is preference and not capability (Sternberg, 1997). Thinking styles can be taught and measured. Thinking styles are not exclusive they are flexible. Thinking styles are social and change with demographic characteristics of the teachers. Thinking preferences play key role in teaching practices. In field of

education, teachers' thinking styles may contribute in teaching in the classroom. Thinking styles may change from task to task and situation to situation, age, experience, gender and location etc. of the teachers. Thinking styles are not exclusive. A teacher may use more than one thinking styles but there will be one predominant thinking style. The combination of more than one thinking style is called thinking style profile (Zhang & Sternberg, 2009).

The adoption of specific instructional practices may associate with what they believe or prefer to think (Zhu, Valcke, & Schellens, 2010). In three fold model developed by (Zhang & Sternberg 2005) recommended that teachers having thirteen thinking styles may be grouped into three thinking style profiles Type-1, Type-2 and Type-3. Thinking style profiles Type-1 consisted of creativity generating and signifies high level of rational complexity. Thinking style profiles Type-2 signifies low level of cognitive complexity and have norm favoring leaning. Thinking style profiles Type-3 may comprised of both the attributes of Type-1 and Type-2 (TS) manifesting the requirement of the situation under consideration in the classroom.

Generally the teachers used: Previous Knowledge, Attaining Concept, Brainstorming, Efficiency, Synaptic, Analyzing Students' Work, Document-Based Questions, Demonstration, Accountable Talks, Short term Assessment, Adapting to Learning, graphic organizers, Homework Assignment, Role play, Reinforcement as instructional practices in the classrooms (CTAC & WCS, 2015; SRC, 2011). There may be the association between (TS) of the teacher and the instructional practices used in the classroom.

Zhang (2008) revealed that Type-1 i.e. Legislative, Judicial, Global, Hierarchic and Liberal (TS) have adaptive value i.e. tend to be generating creativity that include higher level of intricacy and degree of freedom because these thinking styles are considered to be associated with teachers' characteristics that have a better established intellect of identity and open-mindedness. Type-2: Executive, Local, Monarchic and Conservative (TS) are considered norm-favoring inclination tend to involve lower level of rational complexity and degree of freedom. These (TS) are considered to be less adaptive and more anticipating of teachers' characteristics i.e. tends to cynicism and poorly assimilated sense of self. The teachers having Type-3: Oligarchic, Anarchic, Internal and External (TS) may tend to the characteristics of Legislative, Judicial, Global, Hierarchic, Liberal, Executive, Local, Monarchic and Conservative (TS).

These (TS) are considered to be value differentiated because adaptive values of these thinking styles inclined towards context-dependent (Zhang & Sternberg, 2005). Teachers' (TS) revealed consistent patterns of instructional practices. The teachers having legislative (TS) may use instructional practices manifesting creative tendency, having judicial thinking style may use instructional practices having evaluative tendency, having hierarchical thinking style manifest only one task at one time and with liberal thinking style give a new approach to the tasks face in the classroom.

These (TS) profiles have integrated previous models e.g. five dimensions of preferences for the problem solving and these are; teachers' predilections for high degree of organization to low degree of organization, thinking simplicity to thinking convolution, conventionality to conventionality, power to autonomy and group to discrete work. Empirical evidences and conceptualization shows that most of the styles are value- laden or value differentiated rather than value free. These (TS) have trait like and state like aspects as these styles are modifiable and overlap across the theories.

Type-1 (TS) profile related to creative attributes and has tendency to carry out more adaptive values. Type-2 thinking style profile consists of low degree of freedom and strongly related to undesirable attributes. Due to high level of contingency, Type-3 thinking style profile may have some times more or sometimes have less adaptive value depending upon the task or situation in the classroom.

Murphy & Janeke (2009) reported that the teachers of Type-1 thinking styles are inclined to the higher level of complexity and have propensity to be creative, give priority to the given tasks, evaluating, and focus on the large, holistic issues and use new approach to solve the task in the classroom. The teachers Type-2 (TS) have norm-favoring affinity and signify lower level of complexity comprising following given rules strictly, solve one task at one time and use traditional approach for instructional practices in the classroom. The teachers of Type-3 (TS) includes the qualities of both Type-1 and Type-2 (TS) reliant on stylistic and context demand of a explicit situation and tasks i.e. a teacher having Anarchic thinking style may use Type-1 deal with tasks without losing content of central issue and at the same time resolve the issue having simple goal.

The teachers with creative (TS) i.e. legislative, judicial, global, anarchic and external (TS) may use instructional practices leading to various activities having critical and creative tendencies. The teachers with Executive, Monarchic, Hierarchic, Internal and Conservative thinking style may use instructional practices leading to follow strict rules and without devising innovative ways in problem solving in the classroom (Ribas, 2005).

The teachers having executive, local, monarchic and conservative prefer tasks with strict instructions focus on details, work on one assignment at a time and use traditional tactics to tasks and situations in the classroom while using instructional practices. The teachers having anarchic, oligarchic, internal and external (TS) may work on every tasks come along easily, or work on many tasks without any priority, work on their own choice and interact with the students freely in the class room. The study may be helpful for the teachers, administrator and teachers trainers to understand the (TS) of the teachers to assign them duties. The study may also help the teacher trainers to devise such programs which may help teachers to understand the styles and respond to the situation in the classroom.

Above research finds that the teachers' behavior (use of instructional practice) is influenced by the thinking style. But to what extent do teachers' (TS) contribute to the instructional practices of the teachers in the classroom and paved the way for the research. Empirical answering to this questioning may be useful at both conceptual and practical levels. Conceptually, such findings may enhance the nature of (TS) and elevating the growing body of knowledge in the field of education at secondary level and at the practical level such findings may have inferences for teachers and principals. The researcher tends to find out the patterns of instructional practices within each thinking style Type-1, Type-2 and Type-3.

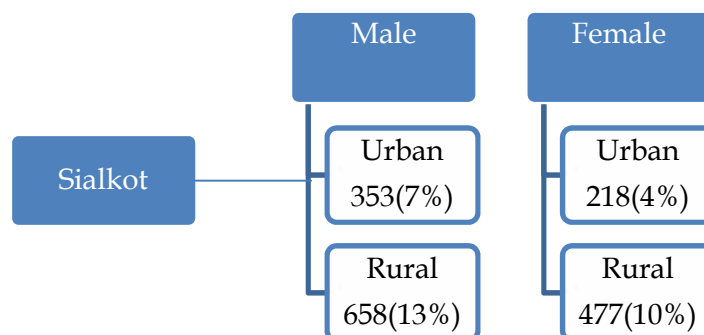
Material and Method

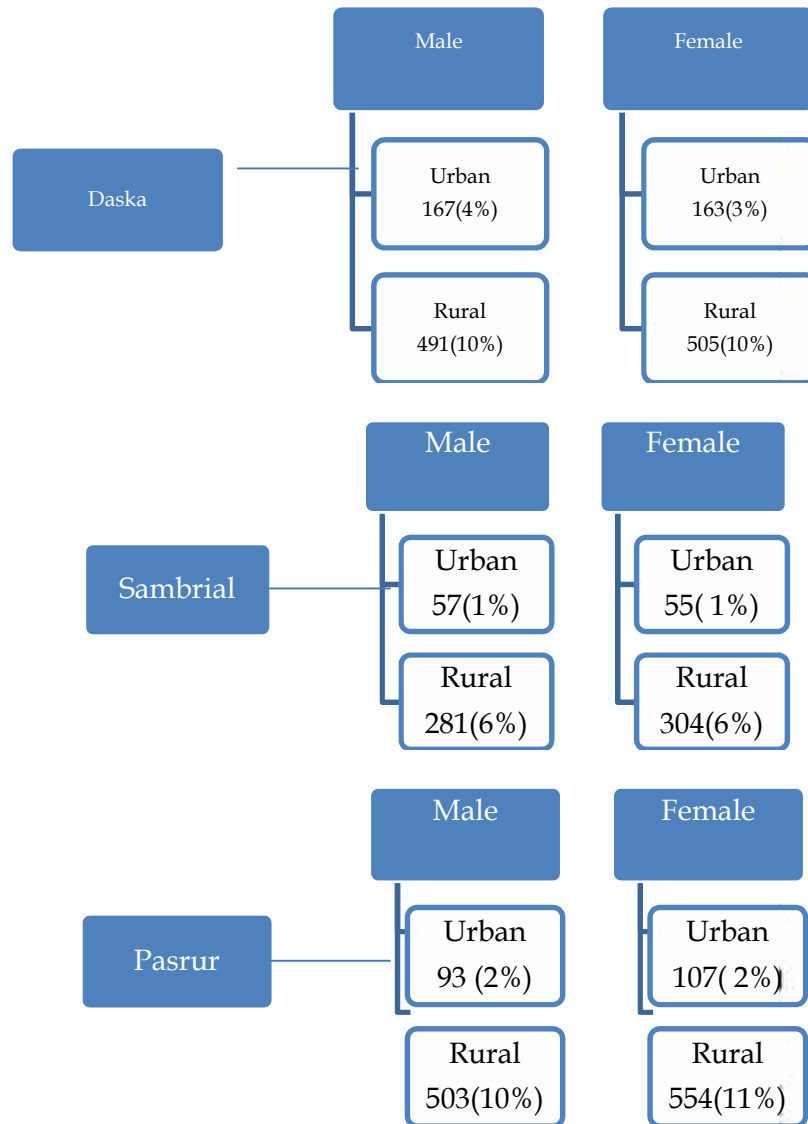
The study was descriptive in nature. The questionnaire and self-developed observation schedule was used to collect data by using cross-sectional design proportionate random sampling technique was used to take sample. The sample included male female urban and rural areas. The data were collected through a questionnaire constructed on 7 point Likert scale. The teachers were classified into 13 thinking styles and through self-developed observation schedule eighteen teachers were observed and aligned with the instructional practice used by the teacher in the classroom. There was no need to check the reliability of the questionnaire of (TSI- R2) as it was adopted tool developed by (Sternberg, Wagner, & Zhang, 2007). The reliability of the self-developed observation schedule was checked in terms of Krippendorff alpha (Hayes and Krippendorff, 2007) which was satisfactory (.834). Frequency distribution was used to analyze the data.

Population

Teachers teaching at secondary level in district Sialkot constituted the population of the study. There were 4890 teachers teaching at secondary level comprising male female living in urban and rural areas.

The population of the study was as follows:

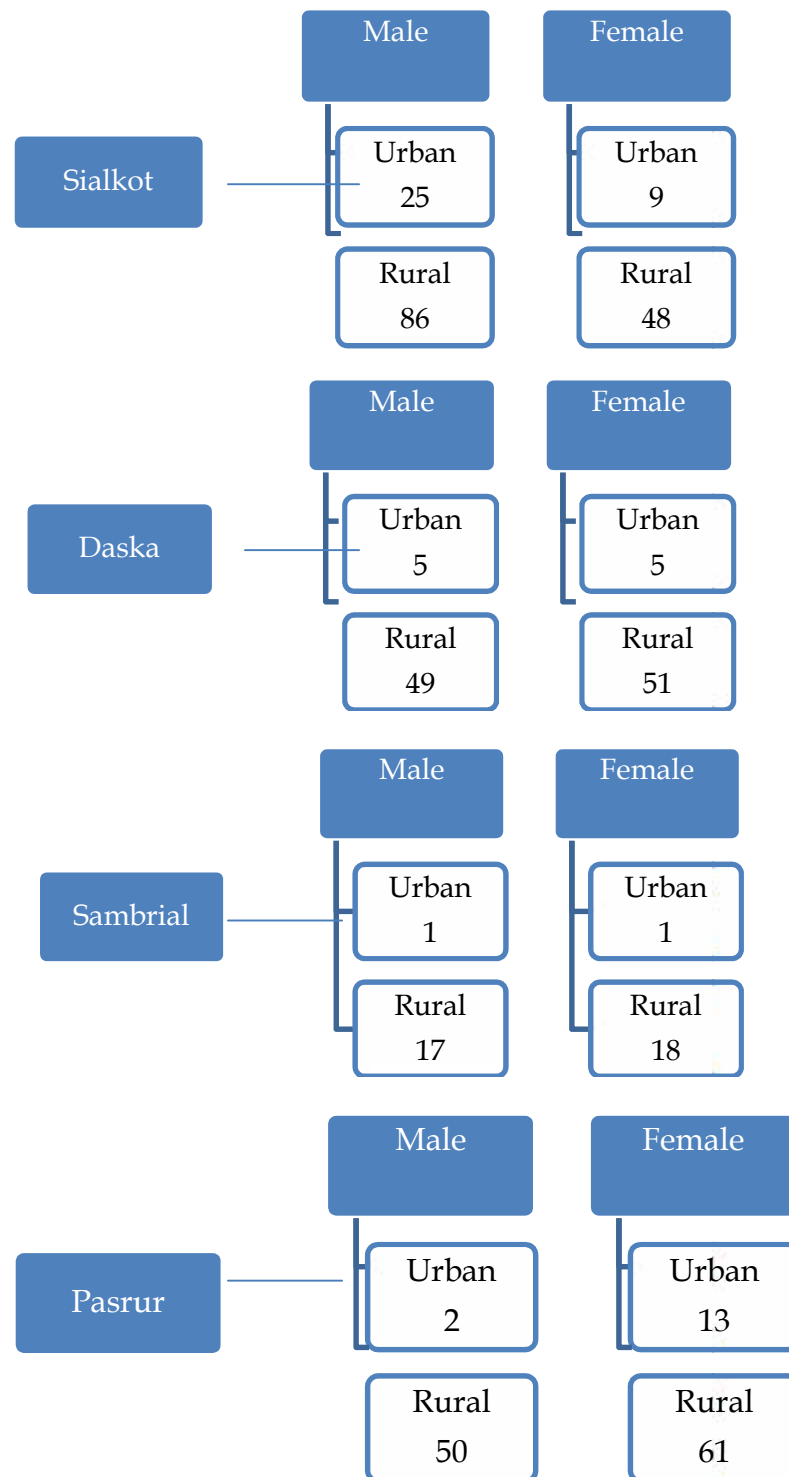




Sample of the Study

441 male 235(urban33, rural 202) and female 206(urban28, rural 178)teacherswere selected through proportionate random sampling.

The sample of the study was as follows:



Results and Discussion

Each Case (Teacher) was observed in the classroom for four consecutive days and fifteen instructional practices were observed. Six cases of each Type (Type-1, Type-2 and Type-3) were observed. Frequency distribution was used to analyze the data.

Table 1
Patterns of Instructional Practices with in Thinking Style Profiles Type-1

Sr #		Case1	Case2	Case3	Case4	Case5	Case6	Total
1	Previous Knowledge	0	4	0	0	0	1	5
2	Attaining concept	12	12	8	24	16	4	76
3	Brainstorming	3	8	0	1	1	20	33
4	Efficiency	2	3	0	0	4	0	9
5	Cooperative learning	12	3	4	8	4	4	35
6	Analyses of student work	16	4	16	8	12	4	60
7	Document-based questions	3	3	8	0	4	0	18
8	Demonstration	4	8	0	1	0	4	17
9	Accountable talk	0	3	3	8	1	0	15
10	Short term assessment	4	4	0	4	8	4	24
11	Adapting to Learning	8	0	0	8	4		24
12	Graphic organizers	12	4	16	24	16	16	76
13	Homework assignment	3	12	4	4	4	16	43
14	Role play	0	0	4	0	8	4	16
15	Reinforcement	4	4	8	8	4	8	36

Table 1 shows that the teachers used Attaining concept and Graphic organizer instructional practices mostly, Analyses of student work, Cooperative learning Short term assessment, Adapting to Learning, Document-based questions, Demonstration, Role play, Accountable talk, Efficiency and previous Knowledge to a lesser degree. It indicates the teachers thinking trends from higher degree of freedom to lower degree of freedom. The teachers having higher and the complex degree of freedom used instructional practice of higher degree of freedom. The teachers of thinking style Type-1 used that instructional practices which

showed their inclination towards creating new rules and regulations, devise new strategies enjoy using authority and adopt any situation easily.

Table 2
Patterns of Instructional Practices with in Thinking Style Profiles Type-2

Sr #		Case1	Case2	Case3	Case4	Case5	Case6	Total
1	Previous Knowledge	8	0	4	0	0	4	16
2	Attaining concept	8	12	8	8	12	8	56
3	Brainstorming	1	3	1	0	8	4	17
4	Efficiency	8	2	4	4	0	0	18
5	Cooperative learning	1	2	2	8	1	1	14
6	Analyses of student work	2	12	2	0	4	0	20
7	Document-based questions	16	1	18	24	16	20	95
8	Demonstration	12	8	12	20	24	16	92
9	Accountable talk	4	8	4	1	0	1	18
10	Short term assessment	16	12	0	12	4	12	56
11	Adapting to Learning	2	8	4	4	4	1	23
12	Graphic organizers	2	4	2	0	0	4	29
13	Homework assignment	8	10	4	4	3	1	29
14	Role play	1	1	0	0	0	0	2
15	Reinforcement	4	4	12	2	4	12	38

Table 2 shows that the teachers used Document-based questions, Demonstration, Attaining concept and Short term assessment process mostly, and Reinforcement, Graphic organizer, Homework assignment, Adapting to Learning, Analyses of student work, Efficiency, Accountable talk, Brainstorming, cooperative learning, Previous Knowledge and Role play to a lesser degree. It indicates the teachers thinking trends from low degree of freedom to the high degree of freedom. The teachers of thinking style Type-2 used instructional practices containing lower degree of freedom. The use of instructional practice showed the teachers inclination of using instructional practices that required following instructions and acting strictly on the given rules.

Table 3
The Patterns of Instructional Practice within Thinking Style Profiles Type-3

Sr #		Case1	Case2	Case3	Case4	Case5	Case6	Total
1	Previous Knowledge	4	4	8	8	4	4	32
2	Attaining concept	8	4	4	0	8	4	28
3	Brainstorming	12	4	8	1	3	4	32
4	Efficiency	8	8	8	1	0	1	26
5	Cooperative learning	2	1	1	0	8	0	12
6	Analyses of student work	8	4	4	20	16	12	64
7	Document-based questions	12	12	12	12	8	8	56
8	Demonstration	3	4	4	0	1	0	12
9	Accountable talk	8	1	2	1	0	0	12
10	Short term assessment	4	16	16	4	4	4	48
11	Adapting to Learning	1	1	0	0	4	4	10
12	Graphic organizers	4	4	4	12	12	15	51
13	Homework assignment	3	4	3	4	8	4	26
14	Role play	0	0	0	4	8	0	12
15	Reinforcement	8	16	16	4	0	11	55

Moreover Table 3 shows that the teachers used Cooperative learning Document-based questions Reinforcement, Graphic organizers, Short term assessment process, Previous Knowledge and Brainstorming mostly and Attaining concept, Efficiency and Homework assignment, Demonstration, cooperative learning, Accountable talk and Role play and Adapting to Learning to a lesser degree. It indicates teachers mixed trends of using instructional practices and having preferences for different thinking styles. It shows that teachers used higher and lower degree of freedom and the same time in the context of situation or the task in the classroom. The teachers of thinking style Type-3 used Document-based questions, Reinforcement, Graphic organizers, Short term assessment, Previous Knowledge, Brainstorming, Attaining concept, Efficiency, Homework assignment, Demonstration, cooperative learning, Accountable talk, Role play, Adapting to Learning instructional practices mostly in the classroom.

Table 4
Alignment of Thinking Style Types and Instructional Practices Observation

Thinking styles Type-1	Explanation	Instructional Practice
Legislative	The teachers with this thinking style have preference to create their own rules and regulations, devise new tactics and enjoy using power	previous Knowledge/ Attaining Concept / Graphic organizer
Judicial	The teacher of this style of thinking foster their attention deeply on evaluating classroom activities critically	Reinforcement / Short term assessment/Homework assignment
Hierarchic	The teachers of Hierarchic (TS) focus their set priorities according to the worth of situation and task	Document-based questions/ Homework assignment
Global	The teachers of Global (TS) prefer the tasks at large and global level	Accountable talk/ Analysis of student work/ Attaining concept
Liberal	The teachers of Liberal (TS) prefer to deal with inventive ideas	Attaining concept / Brainstorming/ Previous Knowledge/ Role play
Type-2 Executive	The teachers of Executive (TS) prefer to follow clear instruction and rules to solve the given task	Demonstration/ Homework assignment / Document-based questions
Monarchic	The teachers of Monarchic thinking style are tend to accomplish one task at one time	Adapting to learning/ Cooperative learning/ Homework assignment
Local	The teachers of local (TS) prefer to deal with specific aspects of a problem	Short term assessment/ Document-based questions
Conservative	The Teachers of (TS) tend to accomplish their tasks according to the given rules and regulations	Homework assignment/ Demonstration

Type-3 Oligarchic	The teachers of Oligarchic (TS) focus attention on more than one task at a time without any priority	Cooperative learning/ Adapting to learning
Anarchic	The teachers of Anarchic (TS) adopt the situation easily	Role play/ Attaining concept/ Graphic organizer
Internal	The teachers of Internal (TS) prefer to work freely	Efficiency/ Graphic organizer/ Role play
External	The teachers of External (TS) like to work in groups	Analyses of student work/ Attaining concept / Accountable talk

The study found that teachers' instructional practices were influenced by their thinking styles. The teachers of thinking style Type-1 having higher and the complex degree of freedom used instructional practice of higher degree of freedom. The teachers used that instructional practices which showed their inclination towards creating new rules and regulations, devise new strategies enjoy using authority and adopt any situation easily. It shows teachers dominant preferences Legislative, Judicial, Global and liberal (TS) (Zhang, 2001; Zhang & Postiglione, 2001). The teachers of (TS) Type-2 used instructional practices containing lower degree of freedom. The use of instructional practice showed the teachers inclination of using instructional practices that required to follow instructions and act strictly on the given rules (Zhang, & Huang, 2001; Zhang, 2002). It shows teachers' dominant preference for the teachers of thinking style Type-3 and used instructional practices of higher and lower degree of freedom simultaneously on the bases of context (Zhang, 2003).

Conclusion

Conclusions drawn from the study revealed that the teachers of thinking style Type-1 preferred using Attaining concept and Graphic organizer instructional practices, Analyses of student work, Cooperative learning Short term assessment and Adapting to Learning, Document-based questions, Demonstration, Accountable talk, Efficiency and previous Knowledge as instructional practices. The teachers of thinking style Type-2 used Document-based questions, Demonstration, Attaining concept and Short term assessment process, Reinforcement, Graphic organizer and Homework assignment, Adapting to Learning, Analyses of student work, Efficiency and Accountable talk, Brainstorming, cooperative learning, Previous Knowledge and Role play mostly. The teachers of thinking style Type-3 used Cooperative learning, Document-based questions, Reinforcement, Graphic organizers, Short term assessment process, Previous Knowledge and Brainstorming, Attaining concept, Efficiency and Homework assignment, Demonstration, cooperative

learning, Accountable talk and Role play and Adapting to Learning as instructional practices.

Recommendations

The teachers of thinking style profiles Type-1 may be assigned the subjects involving critical complex and higher degree of freedom. The teachers of thinking style profiles Type-2 may be assigned the subjects involving lower degree of freedom and the teachers of thinking style profiles Type-3 may be assigned the subjects involving both critical, complex and higher as well as lower degree of freedom at the same time or simultaneously.

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