Volume and Issues Obtainable at Center for Sustainability Research and Consultancy

Sustainable Business and Society in Emerging Economies

ISSN:2708-2172 &(E):2708-2504

Volume 3: Issue 3, September 2021

Journal homepage: www.publishing.globalcsrc.org/sbsee

Effects of Students thinking Styles on Classroom Participation and Academic Achievements: A Case Study of Pakistani Students

***Muhammad Nadeem Mohsin**, Department of Education, GC University Faisalabad, Pakistan

Bushra Naureen, Department of Education, GC University Faisalabad, Pakistan

Kishwer Naheed Rana, Chairperson, Board of Intermediate and Secondary Education Dera Ghazi Khan, Pakistan

*Corresponding author's email: cmbisedgk.edu.pk

ARTICLEDETAILS**History**

Revised format: Aug 2021

Available Online: Sep 2021

Keywords

Thinking styles, classroom participation, learning environment, academic achievements

JEL Classification

12, 120

ABSTRACT

Purpose: The main objective of the study was to identify different thinking styles of students during classroom participation, to assess students' level of classroom participation in relation to their thinking styles and find out the association of demographic variable (gender, age, location) with thinking styles, classroom participation and academic performance of students, to examine the effect of students' thinking styles on their classroom participation.

Methodology: The participants were 1320. The researcher uses random sampling technique to select the sample. The questionnaire for student's thinking styles, questionnaire for Student's classroom participation, questionnaire for student's academic performance were used.

Findings: The results indicated that there are no significant on Factors Legislation, Executive, Global, monarchic and Internal. The post hoc show the significant different among the different variables e.g. Legislative, Executive, Global, Monarchic and Internal. And the results toward participation quality also shows that there is significance difference existed in participation quality. The other variable age shows that up to 22 respondents show significance different.

Implications: Teacher and students understand the thinking styles of each other and know about the actual and required thinking style. Teacher should easily continue their attention and improve their knowledge about students need on the through communication and feedback from the students.

©2021 The authors, under a Creative Commons Attribution- Non Commercial- 4.0

Recommended citation: Mohsin, M. N., Naureen, B. and Rana, K. N. (2021). Effects of Students thinking Styles on Classroom Participation and Academic Achievements: A Case Study of Pakistani Students. *Sustainable Business and Society in Emerging Economies*, 3 (3), 195-207.

Introduction

Students' preferences to use thinking style influences their learning process. This style does not only transfer informational content but cognitive abilities and approaches. Thinking is the main ingredient of individual differences (Belousova & Mochalova, 2020). It enable individuals to separate them-self from others with deserving results. Individual use thinking ability in daily routine. This way equip individuals to discipline evaluation of reasoning, expertise, experiences, observation, analysis, and obtained multi structured information. It can be described as an active, organized, and aim oriented cognitive ability (Apaydin & Cenberci. 2018). Researchers suggested that thinking ability contains observation, problem solving, reasoning, and deciding. These steps are commonly used in everyday life. Yet, the processing of these steps varies individual to individual. That is how thinking style emerged with performing ability. Thinking styles interacts socialization and preferences process to complete given task. Every individual use thinking style in routine on different patterns. It is defined as a way or preferring thinking and done thinking to act (Canbolat, 2011).

Students thinking style and classroom participation have been studies yet lacking with understanding to what extent students' thinking style influence classroom participation and their academic performance. A separate stream of mentioned variables have been identified extensively. By investigating the relationship among them and influences of thinking styles, classroom participation, and academic performance, the present study added new body to the knowledge. This study contributed with different research design and investigation in different platform. The current study is examined to probe up the effect of students' thinking modes on their participation inside classroom and academic performance.

The main purpose of this study is to examine the effect of thinking styles of students on their classroom participation and academic performance. Furthermore, this research study analyze the extent to which thinking styles and classroom participation associate with academic performance. The objectives were to identify different thinking styles of students during classroom participation, assess students' level of classroom participation in relation to their thinking styles and find out the association of demographic variable (gender, age, location) with thinking styles, classroom participation and academic performance of students.

Review of the Related Literature

Active involvement in the classroom during the teaching-learning process always has positive effects on students' outcomes. Active involvement, two communications, student-teacher interaction, teacher students' interaction, and other related skills always fruitful and have positive effects on students' outcomes.

Rocca, 2010 noted that speaking is at the heart of investigations in terms of dialogues in the classroom often seen as an important method to participate in lessons. Through conversation, students should have reach to various concepts, critical thinking practices with in-depth understanding (Mercer and Dawes, 2014). These practices and consequences are beneficial when we expect impactful results. (Dallimore, Hertenstein, & Platt, 2010). It is resulting a broad stimulus for other students to verbal participate in discussion (Littleton & Mercer, 2013) The concept of classroom/school learning environment is developed by educators as Fraser (1986) explored the emotions of students and teachers in school learning environment.

Lewin (2009) elaborated that a dynamic field cultivate total interacting facts to develop behaviors with productivity. However, the circumstances in classroom learning environment that are affected by other internal and external factors change the outcomes. This conditional psychological change is known as "living space". It includes individuals within behavioral conditions known as events. Both living space and events influence psychological variations in given moment.

Steve and Richard (2013) stated that when a student interact to his/her classroom first time, that first

impression enables him/her to make judgment about kind of learning. The first entry of student in the classroom realizes him what is hanging on walls, how benches are arranged and laid out, students face, stationaries, communications, activities, and non-verbal gestures towards him. With the passage of time, this student starts realization of classroom environment by several specific arrangements and activities. Later, students collectively aware about what is classroom and its environment. This environment conveys specific and general learning to students.

In classroom, role of the teacher is crucial and important in terms of student's morality, self-concept and self-confidence development because it can be an instrument of high inspiration. The environment of classroom may heal or injure students with humor or humiliation. It depends on how a positive attitude and self-concept treats students with time and energy.

In higher education, class participation is an important factor to engage students in active learning environment. The students from millennium generation prefer interaction and active participation (Roehling et al., 2011). Educators are struggling to explore strategies to engage students in class participation in classrooms. It is feasible to review existing body of knowledge to understand what participation is actually, factors to increase participation, and factors that influence students' participation.

The students' participation in classroom is an omnipresent concept in teaching learning process. However, the concept of classroom participation and environment is rarely discussed in particular behavior development. Rocca (2010) has reviewed studies about classroom participation. During this period, some academics have investigated that activity as simply attending class dialogue to verbal participation be supposed to be measured as involvement (Dancer & Kamvounias, 2005). While, others limited the concept of classroom participation as unwanted responses that are offered voluntarily by the students (Burchfield and Sappington, 1999). However, a common theme is that verbal contributions or conversations are measured as a sign of contribution. This above mentioned perception has extensive relevance in learning studies. (Rocca, 2010).

As explained by (Song, 2020) Vigilant calm during teaching learning process is also one type of listening. This is commonly considered in school setting in mainland China, where majority of students perform appropriately in the classroom setting. When a student decided to be calm during learning process in classroom, it is indicate that he like to hear others views. However we can say that listening and attentive silence seem to point toward the similar behaviors in their institutions.

O'Connor (2017) conveyed that silence is a common phenomenon in teaching learning process. This can be observed by teacher. The silent participants is totally different with dialogue in the classroom. The interpretation of silence phenomenon in students' context, those who remain attentive in silence can listen carefully to the content of the course. This is probably one of the reasons due to which people keep both language and exercise them in studies and reports.

Students' class involvement is studied under both attendance and its quality now-a-days (Rocca, 2010). Various agencies adopt these criteria to assess student performance. Students interaction in dialogue can be evaluated by frequency, deepness and worth. Students' involvement is commonly used owing to quantitative documentation (Rocca, 2010). The measurement and quality of conversation in class is challengeable due to its subjectivity. Meanwhile, it is equally important to have students' learning outcomes and experiences (Rocca, 2010). Most of subtypes (participation) are divided into occurrence and excellence. Nystrand (1997) investigated class participations for further evidences. Nystrand(1997) found great association between quality dialogues and academic achievement. He argued that learning speeches consisted on declared facts and memorized knowledge. Yet, it is included all aspects that improve understandings with high quality dialogues and speeches. As, explanation of hypothesis, critical thinking, and constituting information. Dallimore et al. (2010) explored that similar results from college

students' achievements. They analyzed data and found that participation referred contributions (verbal). It can be assessed through questionnaires based on self-assessment rating scales. Susak (2016) identified factors influencing class participation levels among second-year students gaining a greater understanding of what affects their participation levels. Logistics, student traits, classroom climate and the teacher were found to influence the level of participation within the classroom. The implications for educational institutions are discussed. The active participation of students with poor performance can influence their learning in a more positive way.

Students' academic participation and achievement are measured in classroom practicing. This evaluation is frequently used in educational researches and practices (Gijbels et al., 2014). Academic performance deals with student who has learned in classroom with the degree of knowledge and skills (Salkind, 2007). In Pakistan the more common methods to assess the achievements level of students are tests (standardize and non standardized tests), practical, assignments, presentation and classroom observations and students attainment levels refers to grades (Fogarty and Pete, 2005). The above mentioned methods provide information about students in easy and quick way. The standardized test are also acknowledged and accepted widely. Therefore, it is essential to give importance of institutional performance when assessing learning outcomes.

Renzulli and Dai (2001) explained that there are many effective instructional methods for teaching learning process but they are not useful for all students same time. Students get advantages of these methods on different styles, "a one-size-fits-all educational approach is not equally useful for students" p. 26. Participation in teaching process through oral and silent ways is two dissimilar approaches. It is illogical to say that speaking or listening more in classroom dialogue will always escort to elevated or squat presentation in results. The success of classroom participation depend upon different indicators and variables. Individual differences also play vital role in assessment these differences can help to enlighten the liaison of classroom dialogue and learning outcomes (Schultz, 2009).

Thinking style play a vital role in every life. Students' different thing styles effect on the class room participation and ultimately effect on the learning outcomes of the students. Style is the suitable way of dealing with others. It is also way of dispensation of knowledge (Kozhevnikov, Evan and Kosslyn, 2014). As an essential aspect of individual differences, styles have been frequently applied in education, and their influence on the learning process. (Evans, 2015)

As explained by Biggs (2001) different students use different styles and ways to get knowledge and process information. Riding and Rayner (1998) explained that "An individual's preferred and habitual approach to organizing and representing information" is different (p. 7-8). For example, some people rapidly respond and whereas others may take more time as expected.

Cheng et al (2011) found that majority of American students use analytical styles, whereas holistic styles is being used by Chinese students. It is also concluded that Americans students are higher in term of conversation and questions than Chinese students. However, there is no significant difference seen regarding indications of perceptive and self-governing thoughts, between Chinese and Americans. Cheng et al. (2011) reported that thinking styles endorsed the differences in class room achievements between American and Chinese students. Although the study did not directly evaluate academic achievement, the conclusions indicated classroom achievements is effected by thinking styles.

Song (2017) identified that there is close relationship of among students' thinking styles, involvement in teaching learning process and academic achievement. Exchange of ideas in teaching learning process is a normally in practice for teaching learning process, and behaviors to take advantage of classroom dialogue should be specified on the way to optimize knowledge.

Methodology

Participants

The total respondents were 1320 and random sampling technique was used to select the sample of all types.

Instrumentation

The following instruments were used for data collection: 1) Questionnaire for Student's thinking styles, 2) Questionnaire for Student's Classroom Participation and 3) Questionnaire for Student's Academic Performance.

Data Collection

The researcher collected the data through two modes: 1) personally approached the respondents, 2) through online.

Results and Findings

Table 1

Overall mean score of thinking style sub factors

Factors	N	Minimum	Maximum	Mean	Std. Deviation
Legislative	1320	1.00	5.00	3.7726	.72579
Executive	1320	1.00	5.00	3.8358	.74723
Judicial	1320	1.00	5.00	3.6492	.74755
Global	1320	1.60	5.00	3.4194	.56707
Local	1320	1.00	5.00	3.6964	.71347
Liberal	1320	1.00	5.00	3.7244	.76235
Conservative	1320	1.00	5.00	3.6185	.73695
Hierarchical	1320	1.00	5.00	3.6765	.73981
Monarchic	1320	1.00	5.00	3.7830	.73851
Oligarchic	1320	1.00	5.00	3.6256	.81839
Anarchic	1320	1.00	5.00	3.5571	.77137
Internal	1320	1.00	5.00	3.5444	.75066
External	1320	1.80	4.80	3.5198	.56442

The above table indicated that the responses of students thinking styles sub factors Legislative $M=3.77$, $SD=.72$ however Executive $M=3.83$, $SD=.74$ while judicial $M=3.64$, $SD=.74$ furthermore global $M=3.41$, $SD=.56$ whereas local $M=3.69$, $SD=.71$ although conservative $M=3.72$, $SD=.76$ moreover hierarchic $M=3.77$, $SD=.72$ the other factor considering that monarchic $M=3.78$, $SD=.73$ while oligarchic $M=3.62$, $SD=.81$ furthermore anarchic $M=3.55$, $SD=.77$ whereas internal $M=3.54$, $SD=.75$ and external $M=3.51$, $SD=.56$. The highest mean value of the factor Executive is ($M = 3.8358$, $SD = .74723$) whereas the lowest value of the factor Global is ($M = 3.4194$, $SD = .56707$).

Table 2

Overall mean score of Classroom Participations sub factors

Factors	N	Minimum	Maximum	Mean	Std. Deviation
Participation Frequency	1320	1.60	4.00	3.1852	.48519
Participation Quality	1320	1.00	4.00	2.7908	.49670

The above table indicated that the responses of students classroom participations sub factors participations frequency $M=3.18$, $SD=.48$ and participations quality $M=2.79$, $SD=.49$. The highest mean

value of the factor Participation Frequency is ($M= 3.1852$, $SD= .48519$) .whereas the lowest value of the factor Participation Quality is ($M= 2.7908$, $SD= .49670$).

Table 3
Gender wise difference in thinking styles

Factors	Gender	N	Mean	SD	T-Value	Sig
Legislative	Female	838	3.7730	.72464	.030	.587
	Male	482	3.7718	.72853	.030	
Executive	Female	838	3.8539	.73157	1.166	.165
	Male	482	3.8041	.77346	1.148	
Judicial	Female	838	3.6510	.74898	.110	.849
	Male	482	3.6463	.74583	.110	
Global	Female	838	3.4239	.57006	.378	.668
	Male	482	3.4116	.56232	.379	
Local	Female	838	3.7461	.68264	3.350	.026
	Male	482	3.6100	.75710	3.258	
Liberal	Female	838	3.7470	.75022	1.422	.517
	Male	482	3.6851	.78223	1.406	
Conservative	Female	838	3.6224	.72423	.257	.690
	Male	482	3.6116	.75927	.253	
Hierarchical	Female	838	3.7074	.72155	2.002	.032
	Male	482	3.6228	.76833	1.968	
Monarchic	Female	838	3.8110	.72772	1.815	.441
	Male	482	3.7344	.75520	1.796	
Oligarchic	Female	838	3.6026	.81188	-1.346	.419
	Male	482	3.6656	.82891	-1.338	
Anarchic	Female	838	3.5730	.77567	.988	.521
	Male	482	3.5295	.76384	.992	
Internal	Female	838	3.5656	.74990	1.356	.938
	Male	482	3.5075	.75132	1.355	
External	Female	838	3.5477	.56007	2.371	.749
	Male	482	3.4714	.56925	2.360	

The above table indicated that the responses of students toward thinking styles the factors “Local” female $M=3.74$, $SD=.682$ however Male $M=3.61$, $SD=.757$ while $p=0.01$. However the indicator hierarchical female $M=3.70$, $SD=.768$ while $p=.049$ the significance existed in sub factors (Local and Hierarchical) of thinking styles gender wise.

Table 4
Gender wise difference in classroom participations

Factors	Gender	N	Mean	SD	T-Value	Sig
Participation Frequency	Female	838	3.22	.470	3.723	.005
	Male	482	3.11	.503	3.656	
Participation Quality	Female	838	2.82	.49608	3.298	.984
	Male	482	2.73	.49269	3.304	

The above table indicated that there are significance existed in classroom participation sub factor participation frequency $p=.000$ the significance difference existed in factor participation frequency gender wise.

Table 5
Area wise difference in classroom participations

Factors	Area	N	Mean	SD	T-Value	Sig
Participation Frequency	Urban	805	3.20	.467	1.752	.080
	Rural	515	3.15	.510		
Participations Quality	Urban	805	2.80	.489	.872	.383

Rural	515	2.77	.507
-------	-----	------	------

The above table indicated that the Factor Participation Frequency Urban area $M=3.20$, $SD=.467$ and Rural $M=3.15$, $SD=.080$, while $p=.080$ and indicator participation quality factor urban $M=2.80$, $SD=.489$ however rural $M=2.77$, $SD=.507$ while $p=.383$ there is no significance difference in above interpretation of classroom participations.

Table 6

Area wise difference in thinking styles

Factors	Area	N	Mean	SD	T-Value	Sig
LS	Urban	804	3.7771	.74122	.284	.150
	Rural	516	3.7655	.70171	.287	
LS	Urban	804	3.8251	.74454	-.645	.825
	Rural	516	3.8523	.75184	-.644	
judicial	Urban	804	3.6552	.74690	.359	.540
	Rural	516	3.6400	.74920	.359	
global	Urban	804	3.4139	.57711	-.437	.267
	Rural	516	3.4279	.55150	-.441	
local	Urban	804	3.6746	.72425	-1.382	.159
	Rural	516	3.7302	.69568	-1.394	
liberal	Urban	804	3.7321	.78053	.458	.156
	Rural	516	3.7124	.73371	.464	
Conservative	Urban	804	3.6274	.73317	.546	.875
	Rural	516	3.6047	.74332	.545	
Hierarchical	Urban	804	3.6580	.76020	-1.138	.041
	Rural	516	3.7054	.70662	-1.156	
Monarchic	Urban	804	3.7796	.73387	-.210	.835
	Rural	516	3.7884	.74637	-.210	
Oligarchic	Urban	804	3.6070	.82722	-1.033	.819
	Rural	516	3.6547	.80438	-1.039	
Anarchic	Urban	804	3.5751	.76452	1.059	.228
	Rural	516	3.5291	.78184	1.053	
Internal	Urban	804	3.5644	.75830	1.211	.251
	Rural	516	3.5132	.73824	1.218	
External	Urban	804	3.5139	.55534	-.475	.330
	Rural	516	3.5291	.57872	-.471	

The above table indicated that the responses of the students toward thinking styles the factor hierarchical Urban $M=3.65$, $SD=.760$ and Rural $M=3.70$, $SD=.7066$ while $p=.041$ there is significance difference existed in factor (hierarchical) area wise.

Table 7

Area wise difference in thinking styles

Factors	Area	N	Mean	SD	T-Value	Sig
LS	Urban	804	3.7771	.74122	.284	.150
	Rural	516	3.7655	.70171	.287	
LS	Urban	804	3.8251	.74454	-.645	.825
	Rural	516	3.8523	.75184	-.644	
judicial	Urban	804	3.6552	.74690	.359	.540
	Rural	516	3.6400	.74920	.359	
global	Urban	804	3.4139	.57711	-.437	.267
	Rural	516	3.4279	.55150	-.441	
local	Urban	804	3.6746	.72425	-1.382	.159
	Rural	516	3.7302	.69568	-1.394	
liberal	Urban	804	3.7321	.78053	.458	.156
	Rural	516	3.7124	.73371	.464	
Conservative	Urban	804	3.6274	.73317	.546	.875
	Rural	516	3.6047	.74332	.545	
Hierarchical	Urban	804	3.6580	.76020	-1.138	.041
	Rural	516	3.7054	.70662	-1.156	
Monarchic	Urban	804	3.7796	.73387	-.210	.835
	Rural	516	3.7884	.74637	-.210	
Oligarchic	Urban	804	3.6070	.82722	-1.033	.819
	Rural	516	3.6547	.80438	-1.039	
Anarchic	Urban	804	3.5751	.76452	1.059	.228
	Rural	516	3.5291	.78184	1.053	
Internal	Urban	804	3.5644	.75830	1.211	.251
	Rural	516	3.5132	.73824	1.218	
External	Urban	804	3.5139	.55534	-.475	.330
	Rural	516	3.5291	.57872	-.471	

The above table indicated that the responses of the students toward thinking styles the factor hierarchical Urban M=3.65, SD=.760 and Rural M=3.70, SD=.7066 while $p=.041$ there is significance difference existed in factor (hierarchical) area wise.

Table 8

Area wise difference in classroom participations

Factors	Area	N	Mean	SD	T-Value	Sig
Participation Frequency	Urban	805	3.20	.467	1.752	.080
	Rural	515	3.15	.510		
Participations Quality	Urban	805	2.80	.489	.872	.383
	Rural	515	2.77	.507		

The above table indicated that the Factor Participation Frequency Urban area M=3.20, SD=.467 and Rural M=3.15, SD=.080, while $p=.080$ and indicator participation quality factor urban M=2.80, SD=.489 however rural M=2.77, SD=.507 while $p=.383$ there is no significance difference in above interpretation of classroom participations.

Discussion and Conclusions

This study found out that the students' thinking style is greatly associated to students' participation in classroom. Their dialogues and discussion increases their academic achievements. Although, there is no association between students' thinking style and their learning outcomes. It influenced and benefited students learning outcomes through listening and speaking in mathematics class. This study explored new perspectives regarding classroom participation, thinking styles, and classroom dialogues in mathematics class. A few teachers used dialogue method in a classroom situation in Pakistan, which already proved a significant method for teaching as Song (2017) approved that there is significant relationship exist in classroom participation in the classroom. Teachers should use dialogue method in the classroom situation as recommended. The thinking style also provides solid evidence regarding its usefulness in outcomes (Cheng et al. (2011). The above literature reviewed to provide significant evidence that the thinking style of each student and classroom participation and positively effect on students' performance.

The previous studies explored that thinking style emerges synergy in various situations. It is evident that these styles can be observed, teach, and measured. There are multiple thinking styles and preferences. As Sternberg (1997) categorized thinking styles into thirteen under five dimensions as functions (executive, legislative, judicial), forms (monarchic, hierarchical, oligarchic, anarchic), levels (local and global), tendencies (liberal and conservative), and fields (internal and external). While, Bramson classified thinking style into synthesists, idealists, pragmatist, analyst thinkers, and realist thinkers. The outcome of the present study regarding identification of different thinking styles of students during classroom participation. The following sub factors e.g. Legislative, Executive, judicial, global, Local, Conservative, hierarchic monarchic, oligarchic, Anarchic, internal, external and the other factors participations frequency and participations quality of indicated the responses of the students above the average.

Student's collaborative and Individual participation in classroom directly and indirectly influence their academic achievements. This can be measured through evaluating learning outcomes, both in educational research and educational practice (Gijbels et al., 2014). Learning outcomes refer to how much a student has learned in school and the extent of his/her knowledge about a specific curriculum topic. The degree of learning is usually manifested in terms of tests and examinations. It is one essential requirement of which is memorizing information (Kember & Watkins, 2010). The outcomes of the present study regarding that that the responses of students toward asses the students level of thinking styles in related to their classroom participation The different sub factors e.g. legislative, executive, judicial, global, local, conservative, hierarchic monarchic, oligarchic, anarchic, internal, external and the other factors participations frequency and participations quality of indicated the responses of the students above the average.

The different thinking styles on participation in classroom activities, and learning outcomes has rarely been discussed in the literature and explored through empirical studies. However, scholars tend to agree that style plays an essential role in affecting students' learning processes (Cheng et al., 2011). It is assumed by Sternberg (1997) that different students characteristically show different thinking styles, and accordingly their area, gender, age etc. The approach learning tasks differently, with some preferring to talk and others tending to be quiet in class. We can probably infer that when a student is allowed to participate in classroom participation using their preferred ways, he/she will have a comfortable and high level of learning experience, which may lead to a desirable learning outcome. There are a few empirical studies suggesting that style may affect how students benefit from participation in classroom to have learning outcomes. The outcomes of the present study regarding that that the responses of students toward association of demographic variables (gender, age, location and area wise) with their thinking styles, classroom participants and academic performance. The students level of thinking styles in related to their classroom participation.

The factors “Local” males and females responses above the average. However the indicator hierarchical both male and female existed significance in sub factors (Local and Hierarchical) of thinking styles gender wise. The other factor classroom participation indicated that there are significance existed in classroom participation sub factor participation frequency. The significance difference existed in factor participation frequency gender wise. The further demographic variables indicated that the responses of the students toward thinking styles the factor hierarchical both urban and rural existed significance difference in factor (hierarchical) area wise.

The other factor classroom participation indicated that the factor participation frequency both Urban and rural above the average score and there is no significance difference existed in classroom participations however age wise comparison of Legislation, Executive, Global, monarchic and Internal there is a significance difference among mean score of legislation, executive, global, monarchic and Internal.

Recommendations

The following recommendation recommended by the results of the study that are mentioned below;

- It is suggested that teacher and students understand the thinking styles of each other and know about the actual and required thinking style.
- Teacher should easily continue their attention and improve their knowledge about students need on the through communication and feedback from the students.
- It is suggested that the enrolment of the students may increase. The students also involve in self-study and by attending in service refresher courses may be introduce to the teachers during class to enhance their experiences and task achieving ability.

References

- Song, Y. (2020). An Investigation of the Relationships between Thinking Style, Participation in Classroom Dialogue and Learning Outcomes – A Study based in Mainland China. Ph.D. Thesis, Faculty of Education, University of Cambridge,
- Alesandrini, K.I., Wittrock, M.C., & Langstaff, J.J. (1984). Visual-verbal and analytic-holistic strategies, abilities, and styles. *Journal of Educational Research*, 77(3), 151–157.
- Allinson, C. W., & Hayes, J. (1988). The Learning Styles Questionnaire: an alternative to Kolb's Inventory. *Journal of Management Studies*, 25(3), 269–281.
- Biggs, J. B. (2001). Enhancing learning: A matter of style or approach? In R. J. Sternberg & L. F. Zhang (Eds.), *Perspectives on thinking, learning, and cognitive styles* (pp. 73-103). Mahwah, NJ; London: L. Erlbaum Associates.
- Boaler, J., Wiliam, D., Brown, M. (2000). Students' experiences of ability grouping - disaffection, polarisation and the construction of failure. *British Educational Research Journal*, 26(5), 631 – 648.
- Burchfield, C. M., & Sappington, J. (1999). Participation in classroom discussion. *Teaching of Psychology*, 26, 290-291.
- Burns, C., & Myhill, D. (2004). Interactive or inactive? A consideration of the nature of interaction in whole class teaching. *Cambridge Journal of Education*, 34(1), 35-49.
- Cheng, H. Y., Andrade, H. L., & Yan, Z. (2011) A cross-cultural study of learning behaviours in the classroom: from a thinking style perspective. *Educational Psychology*, 31(7), 825-841.
- Clark, S. N. (2015). The right to speak. In Resnick, L. B., Asterhan, C. S., & Clarke, S. N. (eds.), *Socializing intelligence through academic talk and dialogue* (167-180). American Educational Research Association.
- Coffield, F., Moseley, D., Hall, E., & Ecclestone, K. (2004). *Learning styles and pedagogy in post-16 learning: A systematic and critical review*. London: Learning and Skills Research Centre.
- Cohen, M. (1991). Making class participation a reality. *PS: Political Science & Politics*, 24, 699-703.
- Dallimore, E. J., Hertenstein, J. H. & Platt, M. B. (2010). Classroom participation in accounting courses: Factors that affect student comfort and learning. *Issues in Accounting Education*, 25(4), 613-629.
- Dallimore, E. J., Julie, H., & Marjorie, P. (2006). Nonvoluntary class participation in graduate

- discussion courses: Effects of grading and acold calling. *Journal of Management Education*, 30(2), 354-377
- Dancer, D., & Kamvounias, P. (2005). Student involvement in assessment: A project designed to assess class participation fairly and reliably. *Assessment & Evaluation in Higher Education*, 30, 445-454.
- Ellis, R. A., Goodyear, P., Prosser, M., & O' Hara, A. (2006). How and what university students learn through online and face-to-face discussion: Conceptions, intentions and approaches. *Journal of Computer Assisted Learning*, 22, 244-256.
- Evans, C. (2015). L. F. – Zhang: The malleability of intellectual styles. *Higher Education*, 69, 169- 172.
- Fassinger, P. (1995). Understanding classroom interaction: Students' and professors' contributions to students' silence. *The Journal of Higher Education*, 65(1), 82-96.
- Fisher, R., & Larkin, S. (2008). Pedagogy or ideological struggle? An examination of pupils' and teachers' expectations for talk in the classroom. *Language and Education*, 22, 1–16.
- Fogarty, R. J., & Pete, B. M. (2005) *How to differentiate learning: Curriculum, instruction, assessment*. Thousand Oaks, Calif; London: Corwin Press; SAGE Publications.
- Fritschner, L. M. (2000). Inside the undergraduate college classroom: Faculty and students differ on the meaning of student participation. *The Journal of Higher Education*, 71, 342-362.
- Fritschner, L. M. (2000). Inside the undergraduate college classroom: Faculty and students differ on the meaning of student participation. *The Journal of Higher Education*, 71, 342-362.
- Gijbels, D., Donche, V., Richardson, J., & Vermunt, J. (2014). *Learning patterns in higher education: Dimensions and research perspectives*. London: Routledge.
- Good, T. L., Sikes, J. N., & Brophy, J. E. (1973). Effects of teacher sex and student sex on classroom interaction. *Journal of Educational Psychology*, 65(1), 74-87.
- Handelsman, M. M., Briggs, W. L., Sullivan, N., & Towler, A. (2005). A measure of college student course engagement. *The Journal of Educational Research*, 98, 184-191.
- Howard, J. R., James, G. H. III, & Taylor, D. R. (2002). The consolidation of responsibility in the mixed-age college classroom. *Teaching Sociology*, 30, 214–234.
- Howe, C., & Abedin, M. (2013). Classroom dialogue: A systematic review across four decades of research. *Cambridge Journal of Education*, 43(3), 325-356.
- Jones, M. G., & Gerig, T. M. (1994). Silent sixth-grade students: Characteristics, attainment, and teacher expectations. *The Elementary School Journal*, 95(2), 169-182.
- Jones, M. G., & Gerig, T. M. (1994). Silent sixth-grade students: Characteristics, attainment, and teacher expectations. *The Elementary School Journal*, 95(2), 169-182.
- Karp, D. A., & Yoels, W. C. (1976). The college classroom: Some observations on the meanings of student participation. *Sociology and Social Research*, 60, 421-439.
- Kember, D., & Watkins, D. (2010). Approaches to learning and teaching by the Chinese. In Bond, M.H. (ed.) *The Oxford handbook of Chinese psychology* (pp. 169-186). Oxford: Oxford University Press
- Kosko, K. W. (2012). Student enrollment in classes with frequent mathematical discussion and its longitudinal effect on mathematics achievement. *The Mathematics Enthusiast*, 9(1-2), 111-148.
- Kozhevnikov, M. (2007). Cognitive styles in the context of modern psychology: Toward an integrated framework of cognitive style. *Psychological Bulletin*, 133, 464–481.
- Kozhevnikov, M., Evans, C., & Kosslyn, S. M. (2014). Cognitive style as environmentally sensitive individual differences in cognition: A modern synthesis and applications in education, business and management. *Psychological Science in the Public Interest*, 15(1), 3-33.
- Littleton, K., & Mercer, N. (2013). *Interthinking: Putting talk to work*. Routledge: Taylor & Francis Group.
- Loftin, C., Davis, L., & Hartin, V. (2010). Classroom participation: A student perspective. *Teaching and Learning in Nursing*, 5, 119–124.
- Mercer, N. (2000). *Words and minds: How we use language to think together*. London: Routledge.
- Mercer, N. (2008). Talk and the Development of Reasoning and Understanding. *Human Development*, 51(1), 90-100.

- Myhill, D. (2006) Talk, talk, talk: teaching and learning in whole class discourse. *Research Papers in Education*, 21(1), 19-41.
- National Center for Education Statistics [NCES]. (2009). Early childhood longitudinal study, kindergarten class of 1998-1999 (ECLS-K): Combined users' manual for the ECLS-K eighthgrade and K-8 full sample data files and electronic codebook. Retrieved from <http://nces.ed.gov/ecls/dataproducts.asp>.
- Nystrand, M. (1997). *Opening dialogue: Understanding the dynamics of language and learning in the English classroom*. New York: Teachers College Press.
- Nystrand, M., Wu, L. L., Gamoran, A., Zeiser, S., & Long, D. A. (2003). Questions in Time: Investigating the structure and dynamics of unfolding classroom discourse. *Discourse Processes*, 35(2), 135-198.
- O'Connor, C., Michaels, S., Chapin, S., & Harbaugh, A. G. (2017). The silent and the vocal: Participation and learning in whole-class discussion. *Learning and instruction*, 48, 5-13
- Pederson, N. L., Plomin, R., & McClearn, G. E. (1994). Is there genetic influence on specific cognitive abilities independent of genetic influence on general cognitive ability? *Intelligence*, 18, 133-143.
- Pratt, N. (2006). "Interactive" teaching in numeracy lessons: What do children have to say? *Cambridge Journal of Education*, 36, 221-235.
- Renzulli, J. S., & Dai, D. Y. (2001). Abilities, Interests, and styles as aptitudes for learning: A personsituation interaction perspective. In R. J. Sternberg & L. F. Zhang (Eds.), *Perspectives on thinking, learning, and cognitive styles* (pp. 23-47). Mahwah, NJ; London: L. Erlbaum Associates.
- Resnick, L. B., Asterhan, C. S. C., & Clarke, S. N. (2015). *Socializing intelligence through academic talk and dialogue*. American Educational Research Association.
- Riding, R. J., & Rayner, S. (1998). *Cognitive styles and learning strategies: Understanding style differences in learning behaviour*. London: David Fulton Publishers Ltd.
- Rocca, K. A. (2010). Student participation in the college classroom: An extended multidiscipline literature review. *Communication Education*, 59(2), 185-213.
- Rop, C. J. (2003). Spontaneous inquiry questions in high school chemistry classrooms: Perceptions of a group of motivated learners. *International Journal of Science Education*, 25, 13-33.
- Salkind, J. N. (2007). *Encyclopedia of measurement and statistics*. Sage Publications.
- Schultz, K. (2003). *Listening: A framework for teaching across difference*. New York: Teachers College Press.
- Schultz, K. (2009). *Rethinking classroom participation: Listening to silent voices*. New York, NY; London: Teachers College Press.
- Sternberg, R. J. (1985). *Beyond IQ: A triarchic theory of human intelligence*. New York: Cambridge University Press.
- Tennant, G. (2004). Differential classroom interactions by ethnicity: A quantitative approach. *Emotional and Behavioural Difficulties*, 9(3), 191-204.
- Vande Veen, C. & Van Oers, V. (2017). Advances in research on classroom dialogue: learning outcome and assessments. *Learning and Instruction*, 48, 1-4.
- Vermunt, J. D., Bronkhorst, L., & Martínez-Fernández, J. (2014). In Gijbels, D., Donche, V., Riachardson, J., & Vermunt, J. D (Eds.), *Learning patterns in higher education* (pp. 33-55). London and New York, Taylor & Francis group.
- Wade, R. (1994). Teacher education students' views on class discussion: Implications for fostering critical reflection. *Teaching and Teacher Education*, 10, 231-243.
- Waring, M. & Evans, C. (2015). *Understanding pedagogy: developing a critical approach to teaching and learning*. Abingdon, Oxford: Routledge.
- Weaver, R., & Qi, J. (2005). Classroom organization and participation: College students' perceptions. *The Journal of Higher Education*, 76(5), 570-601.
- Zhang, L. F. (2013). *The malleability of intellectual styles*. Cambridge University Press.
- Zhang, L.F. (2006). Preferred teaching styles and modes of thinking among university students in

- mainland. *Thinking Skills and Creativity*, 1(2), 95–107.
- Adediwura, A. A. & Tayo, B. (2007). Perception of teacher's knowledge, attitude and teaching skills as predictor of academic performance in Nigerian secondary schools. *Educational Research and Review*, 2(7), 165-171. Retrieved from <http://www.academicjournals.org/ERR.291>.
- Amidon, E., & Flanders, N. (1961). The effects of direct and indirect teacher influences on dependent - prone students learning geometry. *Journal of Educational Psychology*, 52, 286 - 291.
- Anderson, G. & Walberg, H. (2003). Learning environments. In Walberg (Ed.) *Evaluating educational performance: A sourcebook of methods, instruments and examples*.
- Fraser, B. J., & Hebert, H. J. (1991). *Educational environments: evaluation, antecedents and consequences*. Britain: Pergamon Press Oxford (UK).
- Fraser, B. (1986). *Classroom environment*. New York: Croom Helm, 51 Washington Street.
- Lewin, K. (2009). *Principles of topological psychology*. New York: McGraw-Hill.
- Lindzey, G., & Elliot, A. (1977). *The handbook of social psychology* (2nd Edition). USA: Published by Addison-Wesley Publishing Company.
- Moos, R. H., & Trickett, E. J. (1974). *Manual classroom environment scale*, California: Consulting Psychologist Press, Palo Alto.
- Murray, H. (1938). *Exploration in personality*. New York: Oxford University Press.
- Steve, G., & Richard, H. (2013). Establishing a classroom environment that promotes interaction and improved student behavior, *The Clearing House*, 63(8), 375-378.
- Walberg, H. (1974). *Evaluating educational environments*. Bernal, CA, McCutcha.
- Susak, M. (2016). Factors that affect classroom participation. Thesis. Rochester Institute of Technology. Online available at: <https://scholarworks.rit.edu/cgi/viewcontent.cgi?article=10526&context=theses>
- Armstrong, M., & Boud, D. (1983). Assessing participation in discussion: An exploration of the issues. *Studies in Higher Education*, 8(1), 33-44. doi: 10.1080/03075078312331379101
- Dancer, D., & Kamvounias, P. (2005). Student involvement in assessment: a project designed to assess class participation fairly and reliably. *Assessment & Evaluation in Higher Education*, 30(4), 445-454. doi: 10.1080/02602930500099235
- Garside, C. (1996). Look who's talking: A comparison of lecture and group discussion teaching strategies in. *Communication Education*, 45(3), 212. Retrieved from <http://www.tandfonline.com>
- Rocca, K. A. (2010). Student participation in the college classroom: An extended multidisciplinary literature review. *Communication Education*, 59(2), 185-213. doi: 10.1080/03634520903505936
- Roehling, P. V., Kooi, T. L. V., Dykema, S., Quisenberry, B., & Vandlen, C. (2011). Engaging the millennial generation in class discussions. *College Teaching*, 59(1), 1-6. doi: 10.1080/87567555.2010.484035
- Smith, D. G. (1977). College classroom interactions and critical thinking. *Journal of Educational Psychology*, 69(2), 180-190. doi: 10.1037/0022-0663.69.2.180