



SCIENCE TEACHERS' CLASSROOM BEHAVIOUR MANAGEMENT AND ITS RELATIONSHIP WITH ATTITUDE TOWARDS CONSTRUCTIVIST APPROACH IN TEACHING

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ABSTRACT

Classroom behaviour management belief of school science teachers places an affirmative effect on teachers' positive attitude towards constructivist approach in teaching. Teachers' behaviour management is a significant construct that shapes teacher efficiency in the classroom. Constructivism as a set of beliefs provides a sculpt of cognition that leads directly impact in teaching that, in turn, credits the student with the power to become an dynamic learner. The present study was conducted to find out the present status of school science teachers' behaviour management in West Bengal (W.B.) while adopting Constructivist approach in their teaching strategy and its relationship (i.e. classroom behavior management and constructivist approach in teaching). BIMS and CASST scales were administered on 836 randomly selected school science teachers for measuring their behaviour management variability according to their categorical variations and its relation with attitude towards Constructivist approach in teaching. The major findings were observed that the difference in mean score of behaviour management belief of science teachers with respect to gender, location, teaching experience were insignificant but the difference between trained and untrained teachers in behaviour management belief was statistically significant. Lastly, teachers' behaviour management and their attitudes towards Constructivist approach in teaching share a moderately low positive correlation which is also statistically significant.

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INTRODUCTION

Classroom management is the process of ensuring that classroom lessons run smoothly without disruptive behaviour from learners compromising the delivery of instruction. It is crucial in classrooms because it supports the proper implementation of curriculum development, developing best teaching practices, and putting them into action. For years, people's understanding of classroom management was rooted in behavioral theories of teaching and learning. The primary emphasis for classroom management in a behavioral model is the use of techniques that bring students' behavior under stimulus control (Brophy,1999). These behavioral approaches to classroom management are consistent with a 'traditional' or transmission approach to instruction. Over the last decade, however, views on good instructions have shifted. Educators are now encouraged to implement an instructional approach based on constructivist principles of learning (Brophy, 1999; Dollard and Christensen, 1996).

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To complement this shift in instructional approach, some school reformers and researchers propose a shift in classroom management approach. For example, Rogers and Freiberg (1994) suggest that such a shift requires teachers to adopt a person-centered, rather than a teacher-centered, orientation toward classroom management, which features shared leadership, community building, and a balance between the needs of teachers and students. Brophy (2006) argues that "a management system that orients students toward passivity and compliance with rigid rules undercuts the potential effects of an instructional system that is designed to emphasize active learning, higher order thinking, and the social construction of knowledge" (p. 40). Similarly, McCaslin and Good (1992, 1998) warn that efforts to promote Constructivist learning and teaching have "created an oxymoron: a curriculum that urges problem solving and critical thinking and a management system that requires compliance and narrow obedience" (1992, p. 12). Classroom management can be explained as the actions and directions that teachers use to create a successful learning environment; having a positive force on students achieving given learning requirements and destinations. In an effort to ensure all students receive the best education it would seem

beneficial for teacher programmes to spend more time and effort in ensuring educators and instructors are well versed in classroom management. From the student's perspective, effective classroom management involves clear communication of behavioural and academic expectations as well as a co-operative learning environment. Belief in Classroom management (BCLM) is a broad set of teaching behaviours through which the teacher shapes and maintains learning conditions that facilitate effective and efficient instruction resulting in a learning community. The term belief is a product of the social experience that is usually shape up by the share knowledge and idea through the use of common sense to interpret the basic social facts in certain ethnic group. It is the psychological state in which an individual holds a proposition or assertion to be true. In the field of classroom management studies, researchers use the composite parameter of attitude and belief for their research studies (Martin, 2010). Classroom management is defined in this study as a systematic instructional process used by teachers to guide students toward successful rule. It is a broad set of teaching behaviours through which the teacher shapes and maintains learning conditions that facilitate effective and efficient instruction resulting in a learning community (Martin, 2010). According to him teachers' behavior may classified in to three category i.e. non-interventionist, interventionist & interactionalist. The non-interventionist assumes the child has an inner drive that needs to find its expression in the real world. Interventionists anchor the opposite end of the continuum and emphasize what the outer environment does to shape the human organism in a particular way. The non-interventionist is the least directive and controlling, while the interventionist is most controlling. Traditional behaviour modification provides the theoretical foundation for the interventionist's school of thought (Martin, 2010).

Attitude in this study is defined as opined by Sorenson, 1977 as cited in Mangal (2011), "*An attitude is a particular feeling about something. It is partially rational and partially emotional and is acquired, not inherent, in an individual*". An attitude is a hypothetical construct that signify an individual's degree of like or dislike for an item & a set knowledge. Attitudes are normally positive or negative views of a person, place, thing or event. (Martin, 2010). Constructivism works on the philosophy that there is no knowledge independent of the meaning attributed to experience (constructed) by the learning, or community of learners. Knowledge construction means that students construct their own knowledge by actively participating in the process of learning and seeking to find their own meaning in their experiences. Constructivist Approach is defined by Vygotsky (1978) as culture is the prime determinant of individual development. He described experimentally that children construct their own knowledge through 'scaffolding' by the help of 'MKO' (More knowledgeable others) in their zone of proximal development (ZPD) which is also embedded with Interpretation Construction (7-ICON) design model. The principal investigator of Biological Science Curriculum Studies (BSCS), Bybee (1985), developed an instructional model for constructivist teaching strategy, which is called the 'Five E's' and are indicated as follows:

1. **Engage:** The student's first encounter and identity the instructional task.

2. **Explore:** Learning get directly involved with the phenomena and materials.
3. **Explain:** At this stage explanation is multidirectional.
4. **Elaborate:** Students apply their understanding to the world around them, which they had learned in the past.
5. **Evaluate:** This is an ongoing diagnostic process.

Brophy (1999) explains that in these classrooms students are expected to "strive to make sense of what they are learning by relating it to prior knowledge and by discussing it with others" (p. 49).

Science education is the field concerned with sharing science content and process with individuals not traditionally considered part of the scientific community. The field of science education includes work in science content, science process (the scientific method), and teaching pedagogy. While the public image of science education may be one of simply learning facts by rote, science education in recent history also generally concentrates on the teaching of science concepts and addressing misconceptions that learners may hold regarding science concepts or other content. Science education has been strongly influenced by Constructivist thinking. Constructivism in science education has been informed by an extensive research programme into student thinking and learning in science, and in particular exploring how teachers can facilitate conceptual change towards authorised scientific thinking. Science is a dynamic, intensifying body of knowledge covering ever new domains of experience. Broadly speaking, it involves several interconnected steps: observation, looking for regularities and patterns, making hypotheses, devising qualitative or mathematical models, deducing their consequences; verification, observations and controlled experiments, and thus arriving at the principles, theories and laws governing the physical world. The teacher is the leader of inquiry in the science classroom. Teachers of science impart the delight and value of science to their students. They are facilitators and role models of the inquiry process in the classrooms (Pritchard, 2010). Classroom management of teachers is a crucial factor to deliver their daily teaching-learning process in effective nature.

Study on science teachers' classroom management behaviour showed that significant difference exist between male & female and urban & rural teachers' into their classroom management strategy and also their training in profession (Sanford & Evertson, 1985 ; Garrett, 2008; Guha & Ghosh, 2012). It was also found that no significant difference exist between male & female teachers, urban & rural teachers in their status of classroom management mechanism (Ashton & Webb, 1986; Kumar, 2015). Studies (Gencer & Cakiroglu , 2007; Martin,2010) in teachers' beliefs in behaviour management related to classroom management showed an important role in classrooms discipline & effective instruction. Thus, the science teachers' belief in classroom behaviour management and its relationship with teachers' attitude towards Constructivist approach in teaching was felt necessary to inquire about in Indian perspective especially in West Bengal.

Objectives of the study

Following major objectives were identified for the study:

- O₁.** To study and compare the science teachers' belief in classroom behaviour management (behaviour management in

classroom management) in secondary and higher secondary schools under different categorical variables like gender, location of school, teaching training, teaching experience.

O₂. To identify the relationship between science teachers' belief in classroom behaviour management and attitude towards Constructivist approach in teaching science.

Hypotheses

In the radiance of the above objectives the following major hypotheses were set up for the purpose of this investigation:

H₀₁: There is no significant difference in mean score of belief in behaviour management (under classroom management) between male and female science teachers of schools.

H₀₂: There is no significant difference in mean score of belief in behaviour management (under classroom management) between the science teachers of urban and rural schools.

H₀₃: There is no significant difference in mean score of belief in behaviour management (under classroom management) between the trained and untrained science teachers of schools.

H₀₄: There is no significant differences in mean score of belief in behaviour management (under classroom management) among the groups of science teachers' different level of teaching experiences (up to 5 years, 5+ to 10 years, more than 10+ years).

H₀₅: There is no significant relationship between the scores of belief in behaviour management and attitude towards Constructivist Approach of science teachers' teaching.

METHODOLOGY OF THE STUDY

The present study was done through descriptive survey study. Survey research design was employed under descriptive design.

Population of the study

The data was collected from the science teachers of Bengali Medium Secondary and Higher secondary School under academically controlled by West Bengal Board of Secondary Education (WBBSE) and West Bengal Council of Higher Secondary Education (WBCHSE) of West Bengal.

Sample structure & Sampling Technique

The sample was selected randomly from the different secondary and higher secondary schools science teachers from fifteen (15) districts of West Bengal under four socio-economic regions (according to Indian National Population Census, 2011) i.e. Hill Region, Doors Region, Ganges Delta and Rarh Region. All the schools are academically controlled by WBBSE and WBCHSE. 836 Science teachers were selected as sample for this study. Stratified random sampling strategy was followed. The sample structure is as follows:

Table 1 Sample_ Structure

Gender N=836		Location of School N=836		Teaching Training N=836		Teaching Experience N=836			TOT_ N
Male	Female	Urban	Rural	Trained	Untrained	0 to 5 Years	5+ to 10 Yrs	> 10+ Years	
494	342	429	407	659	177	242	299	295	836
59.1%	40.9%	51.3%	48.7%	78.8%	21.2%	28.9%	35.8%	35.3%	100%

Variables of the Study

In this study, the investigator was considered two types of variables. These two types of variables are given below:

Major Variables

1. Teachers' behaviour management as independent variable
2. Attitude towards Constructivist approach as a dependent variable

Categorical Variables

Gender (Male & Female), location of School (Urban & Rural), teaching training (Trained & Untrained status) and teaching experience (up to 5 years, 5+ to 10 years, 10+ years)

Tools of the study

Present researchers had used two types of tools as follows:

Description of the Behaviour and Instructional Management Scale (BIMS)

Behaviour and Instructional Management Scale (BIMS) for measuring science teachers' belief in Classroom Management constructed and standardized by Martin & Sass (2010). The scale contains 24 items with two dimension viz. behavior management dimension, instruction management dimension i.e. the scale is segmented into two sub-scales. Each item has six categories of response which are- strongly agree, agree, slightly agree, slightly disagree, disagree & strongly disagree and '6', '5', '4', '3', '2', '1' are the scores to be awarded. According to the continuum originally endorsement of an item reflects the degree of control the teacher asserts over students. High subscale scores indicate a more controlling, interventionist approach while lower scores are indicative of a less controlling belief in that dimension of classroom management style.

Description of Constructivist Attitude Scale for School Teacher (CASST)

The Scale was consisted of 23 items developed by the investigators having 5 components viz. Enhancing Students' Autonomy', 'Exploration of Students' Learning', 'Creating Self-Learning Environment', 'Elaboration of Concept', 'Ensuring Classroom Democracy'. Content validity was judged by the expert rating of items by five experts. The inter-rating agreement model was used (Gregory, 2005) to see reliability of the raters. The coefficient of content validity was found 0.90. The reliability of the scale was computed by using Cronbach's Alpha and was found 0.820. The scale has a good alpha value and it was acceptable. The categories of responses were 'strongly agree', 'agree', 'undecided', 'disagree', 'strongly disagree' and '5', '4', '3', '2', '1' were the respective scores awarded for the positive responses. Some items were negative in nature and the scoring was done in reverse order i.e. '1', '2', '3', '4', '5'.

Procedure of Data collection

For conducting the study, two scales were administered to 836 school science teachers from those schools chosen under study and asked to response according to their own belief and

thought without any consultation with another teacher and to submit the responded scale by putting it into an envelope to maintain confidentiality.

Test of Normality of data

The normality of BIMS, CASST were checked to the help of Large sample size of sample (N=836) (Pagano, 2013), Skewness, Kurtosis, Standard Error of means, and Standard Error of Skewness & Standard Error of kurtosis, normal distribution of Histogram, P-P & Q-Q plot and Box plot. Hence, data are normally distributed in both cases and there is an ample chance to test the hypotheses with parametric statistics.

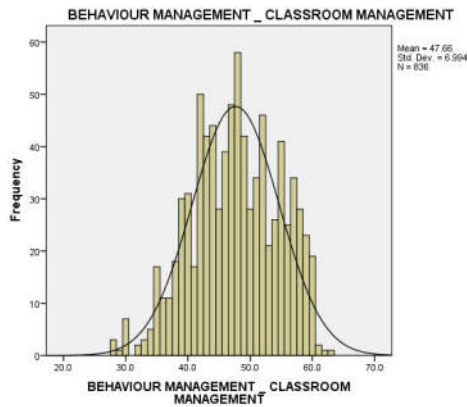


Figure 1

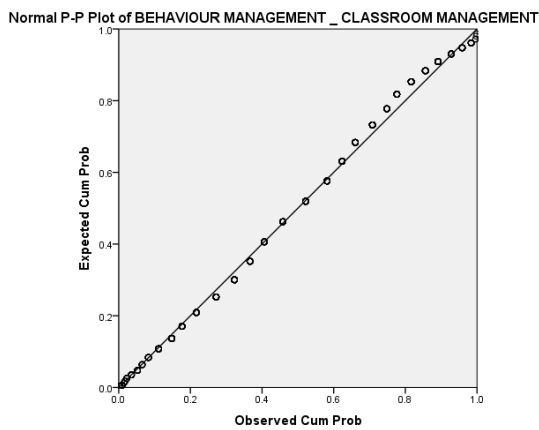


Figure 2

Above figures of Histogram (figure: 1) & Normal P-P Plot (figure: 2) show that the normal distribution of scores of behaviour management.

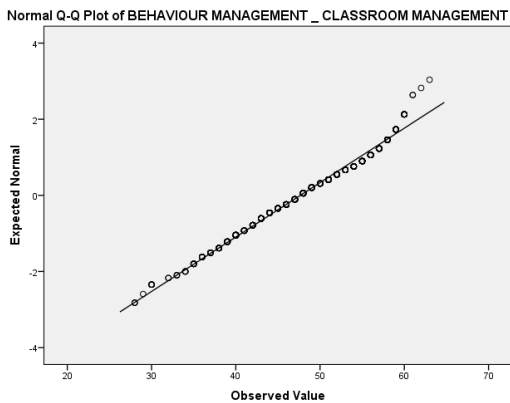


Figure 3

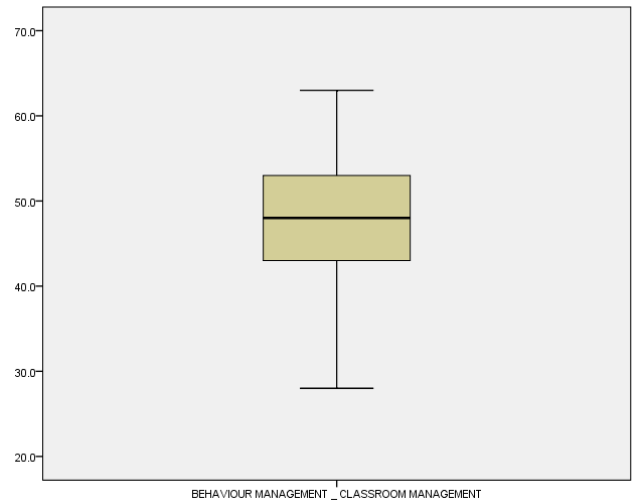


Figure 4

Above figures of Q-Q Plot (figure: 3) & Box Plot (figure: 4) show that the normal distribution of scores of behaviour management.

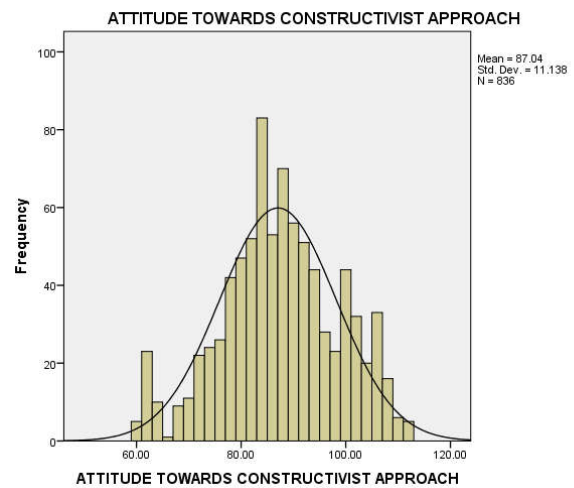


Figure 5

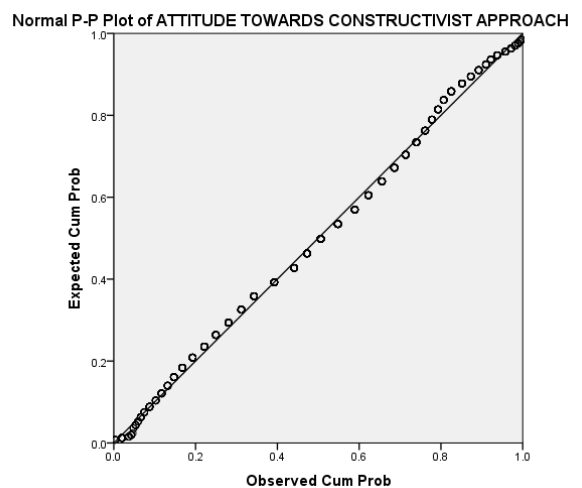


Figure 6

Above figures of Histogram (figure: 5) & Normal P-P Plot (figure: 6) show that the normal distribution of scores of attitude towards Constructivist approach in science teaching.

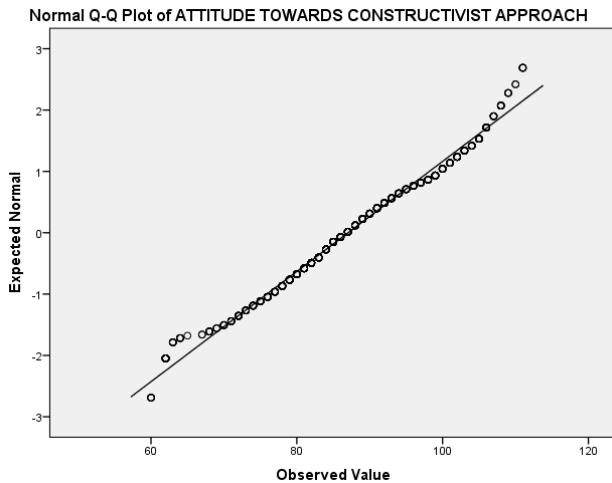


Figure 7

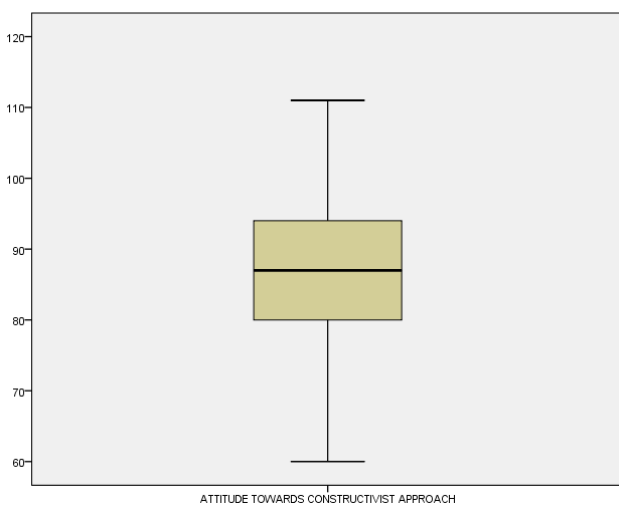


Figure 8

Above figures of Q-Q Plot (figure: 7) & Box Plot (figure: 8) show that the normal distribution of scores of attitude towards Constructivist approach in science teaching.

RESULTS AND ANALYSIS

Data Tabulation and Analysis

The responses of the sample were tabulated in Excel Worksheet, 2007. SPSS software was used for data analyses. Descriptive Statistics such as Mean, Standard Deviation and parametric inferential statistics such as t-test, one-way ANOVA & correlation were used to analyze the data for testing the hypotheses.

Table 2 Group Statistics_ Behaviour Management (under Classroom Management) of science teachers’ _Gender-wise

	Gender	N	Mean	Std. Deviation	Std. Error Mean
Behaviour Management _ Classroom Management	Male	494	47.743	6.7584	.3041
	Female	342	47.538	7.3287	.3963

Table 3 Independent Samples -t test for Behaviour Management (under Classroom Management) of science teachers’ _Gender-wise

Sub- scale	Levene's Test for Equality of Variances		t- test for equality of means				
	Equal variances assumed	F	Sig.	t	df	Sig. (2 tailed)	Mean Difference
Behaviour Management _ Classroom Management	Equal variances assumed	1.022	.312	.416 [#]	834	.677	.2049

([#]not significant at the 0.05 level)

In the vivacity of the objectives, after completion of data analysis and interpretation, several points are viewed and the major findings and finding-based interpretation are as follows:

For H₀₁, the results of the t-test represent in table no. 2 show that the mean and SD of male science teachers' behaviour management are 47.743 and 6.75 respectively while the mean and SD of female science teachers are 47.538 and 7.32. Analyses of Levene's test for equality of variances (table no.3) shows that F value is 1.022 & p value is 0.312 (p>.05) so, homogeneous variances can be assumed. Table no.3 also shows that in case of science teachers' behaviour management between male and female teachers the calculated t₍₈₃₄₎ value is 0.416 and 'p' value is 0.677 (p>0 .05). Hence, t is not significant at 0.05 level and H₀₁ is not rejected. So, it can be concluded that there is no significant difference in mean score of behaviour management between male and female science teachers of schools.

Table 4 Group Statistics_ Behaviour Management (under Classroom Management) of science teachers’ _Location-wise

	Location of school	N	Mean	Std. Deviation	Std. Error Mean
Behaviour Management _ Classroom Management	Urban	429	48.028	7.2250	.3488
	Rural	407	47.270	6.7284	.3335

Table 5 Independent Samples -t test for Behaviour Management (under Classroom Management) of science teachers’ _Location-wise

Sub- scale	Levene's Test for Equality of Variances		t- test for equality of means				
	Equal variances assumed	F	Sig.	t	df	Sig. (2 tailed)	Mean Difference
Behaviour Management _ Classroom Management	Equal variances assumed	1.374	.241	1.567 [#]	834	.117	.7577

([#]not significant at the 0.05 level)

While calculating the mean and SD value of urban and rural science teachers' behaviour management in table no. 4 show that the mean and SD of urban science teachers are 48.028 and 7.22 respectively while the mean and SD of rural science teachers are 47.270 and 6.73. For H₀₂, the results of the t-test depict analyses of Levene's test for equality of variances (table no.5) the F value is 1.374 and corresponding p value is 0.241 (p>.05) so, equal variances be assumed. Table no. 5 also shows that in case of behaviour management in variation of

Table 6 Group Statistics of Behaviour Management _ Teaching Training-wise

	Training	N	Mean	Std. Deviation	Std. Error Mean
Behaviour Management _ Classroom Management	Trained	659	47.354	7.0144	.2732
	Untrained	177	48.797	6.8160	.5123

Table 7 Independent Samples -t test for Behaviour Management (under Classroom Management) of science teachers’ _Teaching Training-wise

Sub- scale	Levene's Test for Equality of Variances		t- test for equality of means				
	Equal variances assumed	F	Sig.	t	df	Sig. (2 tailed)	Mean Difference
Behaviour Management _ Classroom Management	Equal variances assumed	.000	1.000	-2.444 [*]	834	.015	-1.4430

(^{*}significant at the 0.05 level)

location of schools (urban and rural area) the calculated $t_{(834)}$ value is 1.567 and 'p' value is .117 ($p > 0.05$). Hence, t is not significant at 0.05 level and H_02 is not rejected. So, it can be safely said that there is no significant difference exist in mean score of behaviour management between the science teachers of urban and rural schools.

For H_03 , the results of the t-test (table no. 6) validate that the mean and SD of trained science teachers behaviour management are 47.354 and 7.01 respectively while the mean and SD of untrained science teachers are 48.797 and 6.81. Analyses of Levene's test for equality of variances (table no.7) shows that F value is < 0.001 & corresponding p value is 1.000 ($p > 0.05$) so, homogeneous variances can be assumed. Table no. 7 also shows that calculated $t_{(834)}$ value is 2.444 and 'p' value is 0.015 ($p < 0.05$). Hence, t is significant, therefore, H_03 is rejected. This means that there is a significant difference in mean score of behaviour management between the trained and untrained science teachers of schools.

Table 8 Group statistics: Behaviour Management (under Classroom Management) _Teaching Experience wise

	N	Mean	Std. Deviation	Std. Error
0 To 5 Years	242	47.657	6.7868	.4363
5+ Years to 10 Years	299	48.261	6.9990	.4048
More Than 10+ Years	295	47.051	7.1253	.4148
Total	836	47.659	6.9937	.2419

Table 9 Oneway ANOVA test for Behaviour Management (under Classroom Management) of science teachers' _Teaching Experience wise

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	217.418	2	108.709	2.229 [#]	.108
Within Groups	40624.423	833	48.769		
Total	40841.841	835			

([#]not significant at the 0.05 level)

For H_04 , the results of the one-way ANOVA (table no.9) show that calculated F ($_{2,833}$) value is 2.229 and p-value is 0.108 ($p > 0.05$). Hence, F-value is not significant, therefore H_04 is not rejected. So, it can be interpreted that there exist no significant differences in the mean scores of behaviour management among the three groups of science teachers in relation to their teaching experiences (up to 5 years, 5+ to 10 years & more than 10+ years). While the mean and SD of the concerned three groups (table no. 8) are respectively 47.657 & 6.78 (up to 5 years); 48.261 & 6.99 (5+ to 10 years) and 47.051 & 7.12 (more than 10+ years).

Table 10 Correlations matrix of BM_CM & ACA

		BM_CM	ACA
Behaviour Management _ Classroom Management	Pearson Correlation	1	.0263**
	Sig. (2-tailed)		.000
Attitude towards Constructivist approach in science teaching	Pearson Correlation	0.263**	1
	Sig. (2-tailed)	.000	
	N	836	836

(**correlation is significant at the 0.01 level)

(BM_CM= Behaviour Management _ Classroom Management; ACA= Attitude towards Constructivist approach in science teaching)

While to find the relationship between science teachers' behaviour management under classroom management & attitude towards Constructivist approach in teaching it has been found from analysis in table no. 10 that, Pearson correlation coefficient i.e. 'r' between score of BM_CM and ACA is 0.263 and p value is < 0.001 which is significant at the 0.01 level as well as 0.05 level. Hence, H_05 is rejected. So, it can be interpreted that there exist moderately low positive correlation between teachers' behaviour management & attitude towards Constructivist approach in teaching of science at school level.

DISCUSSION

Present study shows that gender variation does not make any difference in structure of science teachers' behaviour management which also supports the study of Ashton & Webb (1986); Kumar (2015), though male science teachers' behaviour management are insignificantly slight higher than the female science teachers' behaviour management strategies. Another observation is held in school science teachers' behaviour management under location wise of the schools that insignificant difference is noticed in urban and rural schools teachers' behaviour management this finding is supported by the previous study of Yilmaz (2004); Lewis, *et al.*(2005) & Garrett (2008). Urban schools science teachers' behaviour management level is insignificantly higher than rural schools teachers' behaviour management. Socio-economic background, cultural settings, and the life style of teachers in urban and rural areas may play a crucial role in the use of balanced behaviour management strategies among them. A significant difference is noticed in case of science teachers' behaviour management in relation to their teaching-training status that is untrained teachers' behaviour management is higher than the trained teachers' behaviour management. It is a hopeful picture that in course of time untrained teachers will be incorporated to the normal teaching force with the help of their behaviour management and be able to manage their students as like as the trained teachers' taught are concerned. The study also explores that there is a statistical significant moderately low positive correlation between teachers' behaviour management and their attitude towards Constructivist approach in teaching which means that when high behaviour management level sustains then it may lead a positive attitude towards Constructivist approach in science teachers' teaching process. Present study also reveals that the behaviour management level of medium experienced science teachers (5 to 10 years in service) are moderately higher in the mean score than the other experienced teachers' mean scores though, statistically it is insignificant.

Educational significance of the study

The findings of this study may have some specific significant impact as follows:

1. This study is an endeavor to locate how a science teacher presents himself, makes an impression on administrators, colleagues, parents, and students. Teachers' beliefs, practices and attitudes are important for understanding and improving educational processes.

2. This study is an endeavour towards the understanding the ideology of teachers' classroom management and attitude towards Constructivist approach in teaching strategy.
3. Present study has an important initiative to measure the science teachers' behaviour management among the school teachers in different categorical variables.
4. It is an attempt in understanding the relationship between science teachers' behaviour management and teachers' attitude towards Constructivist approach in teaching.
5. It may helpful to teachers to develop and adopt new teaching strategy in classroom teaching situation.

CONCLUSION

Constructivism concentrates on learning how to think and understand through learners' active engagement in learning procedure. This situation gives students the ownership to learn, since learning is based on students' questions and explorations and teacher's classroom behaviour management which have a pivotal role to organise such kind of democratic learning environment in school science education system. India is developing in the arena of Physical and Life sciences, and also other segments of sciences powered by its recent technological growth. Today's school learners' nourishment leads them to make curiosity in science which is very much essential for making them a future innovator in the field of science. Science teachers' classroom behaviour management strategy and their attitudinal position towards Constructivist approach in teaching are the important factors for the learners to give them the right pace and choice to grow up with their originality. The major findings of the study show that teaching training status-wise the teachers' behaviour management level is significantly different whereas gender-wise, schools location-wise and teaching experience-wise the difference of teachers' behaviour management are insignificant. Moreover, teachers' behaviour management and their attitudes towards Constructivist approach share a moderately low positive correlation. Hence, in conclusion it may be suggested that teachers, researchers are to be actively engaged for exploring the different factors of Constructivist approach in teaching that can be made a real success in teaching-learning process for maximizing the learning outcomes of the learners.

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