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Teaching Aptitude And Classroom Transaction Of Secondary School Science Teachers Pursuing B.Sc. B.Ed Integrated And B.Ed Two Year From RIE, NCERT And B.Sc. B.Ed Integrated From Central University, Sagar

Mahendra Singh Belwanshi Research Scholar, Barkatullaha University, Bhopal, belwanshimahendra@gmail.com

Dr.Hemant Kumar Khandai Prof. Dept.of Contuning Education And Extension, Barkatullah University , Bhopal.

Dr.Jamna Prasad Makwe, Associate Prof., Rajeev Ghandi College, Bhopal.

Abstract

The present paper is an account of a comparative study of B.Sc. B.Ed Integrated and B.Ed Two year of RIE, NCERT and B.Sc. B.Ed Integrated of Central University, Sagar with respect to Secondary School Science Teacher's Teaching Aptitude and impact on Classroom Transaction in Madhya Pradesh. The sample consisted of 140 pre-service teachers from the three courses. Descriptive survey method was used in the present study. The data was collected using Teaching Aptitude Test developed by S. C. Gakhar and Rajnish and Classroom Transaction Scale developed by the researcher. The differences in gender and stream of the pre-service teachers with respect to their teaching aptitude and classroom transaction and their relationship was found using appropriate statistical techniques. It was found that most of the pre-service teachers possessed average teaching aptitude. It was found that the teaching aptitude and classroom transaction are positively related. The teaching aptitude and classroom transaction of pre-service teachers pursuing B.Sc. B.Ed integrated of RIE, NCERT were found to be higher than other courses.

Keywords: B.Sc. B.Ed Integrated**,** B.Ed Two year**,** Teaching Aptitude and Classroom Transaction.

Introduction

According to Peter Renshaw "..... the good teacher is one who knows his pupils, who has a sound grasp of the subjects he teachers, and an understanding of a range of methods most likely to facilitate the learning of concepts, principles, facts, skills and attitudes at the

different stages of children's conceptual development. The teaching profession is special in many aspects, some being that; a teacher is responsible for the provision of knowledge and skills in the society. The teacher is also responsible for nurturing human beings with different manners and attitudes so that they can live well in the society. A well designed teacher education programme helps in inculcating in the pre-service teachers the ability to be efficient teachers. Teacher education refers to the policies, procedures, and provision designed to equip prospective teachers with the knowledge, attitudes, behaviors, and skills they require to perform their tasks effectively in the classroom, school, and wider community. The quality of pedagogical inputs in teacher education programmes and their effective utilization for the purpose of preparing prospective teachers depend largely on the professional competence of teacher educators and the ways in which it is utilized for strengthening the teacher education programme.

Teaching aptitude is a major aspect that affects affective teaching. Teaching aptitude may refer to a person's capacity or hypothetical potential for acquisition of certain characteristics, mental abilities and inclination involved towards the teaching profession with respect to which the individual has had little or no previous training. Teaching aptitude is the capacity to acquire proficiency with a given amount of training in teacher education. It refers to the capacity of an individual to be skilled in teaching by receiving formal or informal training. Teaching aptitude is a person's potential for teaching which is the sum total of all the traits and abilities that are needed for successful teaching. There is an ample scope for selecting right personal in the profession. To raise the standard of education, it is imperative to select proper persons for the profession. When we say a person possesses an aptitude for teaching, it is assumed that he has a good proportion of the traits required for becoming successful in teaching. The magnitude of these traits is manifested through the way the classroom transaction takes place. The classroom in a school, as a unit of communication and transaction between teacher and pupils and amongst pupils, can be said to play an important role in determining the achievement of pupils. The recent researches have focused on what goes on in the classroom by way of transaction between the teacher and the pupils as also among the pupils themselves. Classroom transaction is the process of verbal interchange between the teacher and the pupils and also amongst the pupils themselves. It is the process through which the teaching - learning task takes place. Effective teaching is said to occur when the teacher and the pupils transact with each other and also when the pupils transact amongst themselves. Classroom transactional practice includes teacher, content, environment, assessment, mode, style etc. For effective classroom practices quality relationships should be built. When it comes to Science education, it is a powerful means of developing attitude of critical inquiry; respect for truth, simplicity, adaptability and systematic work, which are pre-requisite for maintaining the process of social change and national development. Hence it is necessary that the students during their pre service training are trained appropriately to have good skill to conduct successful classroom

transaction. Students undergoing pre-service training in two year B.Ed have less opportunity for exposure classroom transaction and while students undergoing pre-service training in four year integrated B.Sc. B.Ed have more opportunity to exposure to classroom transaction.

In the present scenario two modes of professional courses are available which aim to prepare science teacher with their pre-service curriculum i.e. two year B.Ed and B.Sc. B.Ed integrated. Both integrated and traditional B.Ed. courses boast the same quality. But it needs to be seen in the light of the teaching competency, teaching aptitude and classroom transaction of the pre service teachers. The Regional Institutes of Education have been the pioneers in the B.Ed integrated courses and have been running them since a long time with success. This model is being adopted pan India. There B.Ed two year course too is a course of repute and provides opportunity to those who opt for a professional degree in teaching later in their career. The Central University of Sagar too has been running B.Ed integrated course now for a long time and the department is name to reckon with when it comes to training pre service teachers. The present research work is a comparative study of B.Sc. B.Ed integrated and B.Ed two year of RIE, NCERT and B.Sc. B.Ed integrated of Central University, Sagar with respect to Secondary School Science Teacher's Competencies, Teaching Aptitude and impact on Classroom Transaction in Madhya Pradesh. Not many studies have been conducted in this regard. Since the present study aims to study the student teachers who are prospective teachers and are going to handle to future of the country, it is necessary to start with their role as a teacher. The present paper aims to find the teaching aptitude and its effect on classroom transaction among secondary school science teachers pursuing B.Sc. B.Ed integrated and B.Ed two year of RIE, NCERT and B.Sc. B.Ed integrated of Central University, Sagar.

Need and Importance of the Study

The recent developments in teacher education and the aspect of teacher preparedness theory and practice show that it is an area of educational concern that needs immediate and targeted attention. No education system can be better than the quality of its teachers. The most successful countries, from the Far East to Scandinavia, are those where teaching has the highest status as a profession; South Korea recruits from their top 5 per cent of graduates and Finland from the top 10 per cent. According to Hirst (1975) being clear about what teaching is matters vitally because how teachers understand teaching very much affects what they actually do in the classroom. Singh (2015) believed that no nation can rise above the level of its teachers and it is the teacher who plays pivotal role in the educational system and is a catalytic agent of change in the society. This in turn has focused attention on the importance of teacher education, from initial training and induction for beginning teachers, to on-going professional development to help update teachers' knowledge, deepen their understanding and advance their skills as expert practitioners (Livingston, 2016). This

concern is also expressed by Borko (2004) when he says that preparing teachers for the teaching profession is conceived as being a higher priority in any country. Furhter, Vachhrajani (2005), Goel & Goel (2005) are of the view that there is an urgent need to update the Teacher Education Programme with reference to the changing needs of society.

A number of factors affect the performance of the teachers. One of the most importance aspects in teaching is Teaching aptitude. Teaching needs three qualities. Knowledge is the first, communication is the second, aptitude is the third (Topal and Pant, 2016). According to Ryans (1960) a teacher with good teaching aptitude must be aware of the following essentials of teaching viz., plan a lesson, motivate students, curricular statements related, learning materials, teaching-learning strategies, essentials of the content, consolidation, elaboration group activity, continuous and comprehensive evaluation etc. Teaching aptitude is one of the major determinants of teacher effectiveness (Vyas, 1982). It is also found to be a good predictor of teacher effectiveness (Beena, 1995). Kukruti (1990) in a study of some psychological correlates of successful teachers found that there is a positive relationship between aptitude and success in teaching. Although it is clear that teaching aptitude is an important aspect for success in the teaching profession there is much confusion in the demographic variations.

The aspect of classroom transaction and its relationship with teaching aptitude has not been covered in researches so far. There are not many studies where the variable classroom transaction has been studied. Most of the studies have concentrated on the various methods being utilised for improving the interaction in the classroom. There is no study where the impact of certain variables in seen on classroom transaction and vice versa. Neither has been there any study to find the difference in classroom transaction from the aspect of various demographic variables. There is need to conduct research in this important area, as it is classroom transaction which sets the mood in the class. It is through classroom transaction that learning is enabled in a classroom. Hence research in this area is imminent and the present research work is a small step this direction.

Objectives of the study

1. To study the status of teaching aptitude among secondary school science teachers from B.Sc. B.Ed integrated, B.Ed two year of RIE, NCERT and B.Sc. B.Ed integrated of Central University, Sagar.
2. To study the status of teaching aptitude among male and female secondary school science teachers.
3. To study the status of teaching aptitude among secondary school teachers from physical and biological sciences.

4. To study the effect of course, gender and their interaction on teaching aptitude of science teachers.
5. To study the effect of course, stream and their interaction on teaching aptitude of science teachers.
6. To study the impact of teaching aptitude on classroom transaction.
7. To study the relationship between teaching aptitude and classroom transaction.

Research Questions

1. What is the status of teaching aptitude among secondary school science teachers from B.Sc. B.Ed integrated, B.Ed two year of RIE, NCERT and B.Sc. B.Ed integrated of Central University, Sagar?
2. What is the status of teaching aptitude among male and female secondary school science teachers?
3. What is the status of teaching aptitude among secondary school teachers from physical and biological sciences?

Hypothesis

1. There is no significant effect of course, gender and their interaction on teaching aptitude of science teachers.
2. There is no significant effect of course, stream and their interaction on teaching aptitude of science teachers.
3. There is no significant impact on classroom transaction of students having different levels of teaching aptitude.
4. There is no significant correlation between teaching aptitude and classroom transaction.

Methodology

The methodology used in the present study is a descriptive survey method. As sample for the present study 80 pre-service teachers pursuing B.Sc, B.Ed and 35 pre-service teachers pursuing Two Year B.Ed from Regional Institute of Education, NCERT, Bhopal. The sample also comprised of 25 pre-service teachers pursuing B.Sc, B.Ed from Central University, Sagar. Among these pre-service teachers 63 were from biological sciences stream and 77 were from physical sciences stream. Further there were 68 males and 72 female pre-service teachers chosen for the study. Thus in all 140 pre-service teachers were part of the sample for the present study. The data was collected using Teaching Aptitude Test developed by S. C. Gakhar and Rajnish and Classroom Transaction Scale developed by the researcher.

Analysis and interpretation of data

Status of Teaching Aptitude among Secondary School Science Teachers

The teaching aptitude scores were taken separately for the secondary school science teachers from the three courses and according to the scores obtained they were categorized as having low, moderate and high teaching competency. The same is shown in figure 1.

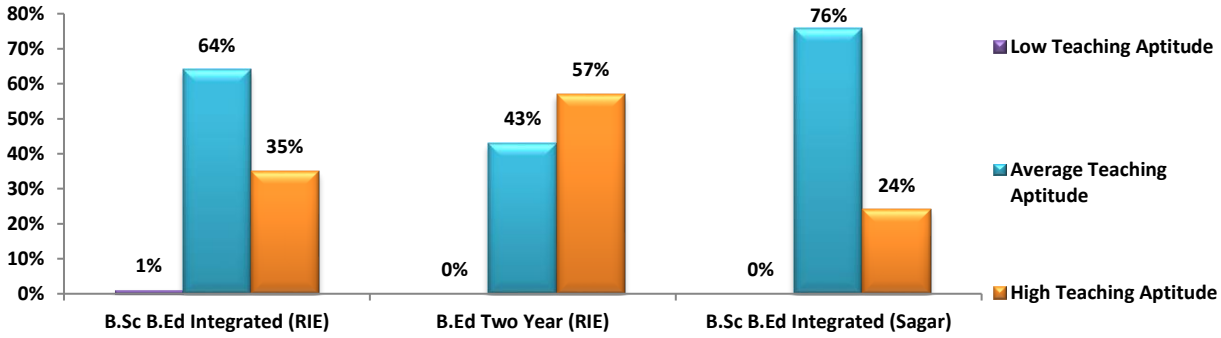

Figure 1 Status of Teaching Aptitude among Secondary School Science Teachers

From figure 1 it can be seen that among secondary school science teachers 1% pursuing B.Sc. B.Ed Integrated from RIE, Bhopal have low teaching aptitude, 64% have average and 35% have high teaching aptitude, similarly among secondary school science teachers pursuing B.Ed two year from RIE, Bhopal, none have low teaching aptitude, 43% have average and 57% have high teaching aptitude, while among secondary school science teachers pursuing B.Sc. B.Ed Integrated from Sagar University none have low teaching aptitude, 76% have average and 24% have high teaching aptitude. From above it can be seen that very few secondary school science teachers from all the groups possess low level of teaching aptitude.

Status of Teaching Aptitude among Male and Female Secondary School Science Teachers

The teaching aptitude scores were taken separately for the male and female secondary school science teachers and according to the scores obtained they were categorized as having low, average and high teaching aptitude. The level-wise teaching aptitude of male and female secondary school science teachers is shown in figure 2.

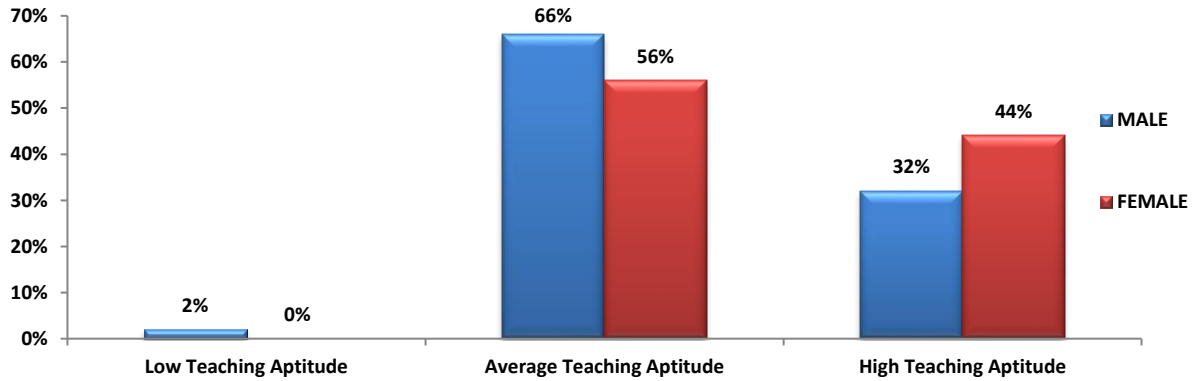

Figure 2 Status of Teaching Aptitude among Male and Female Secondary School Science Teachers

From figure 2 it can be seen that among the male senior secondary school teachers 2% have low teaching aptitude, 66% have average and 32% have high teaching aptitude while among the female senior secondary school teachers none have low teaching aptitude, 56% have average teaching aptitude and 44% have high teaching aptitude. From above it can be inferred that more than half of the male and female senior secondary school teachers possess average level of teaching aptitude.

Status of Teaching Aptitude among Secondary School Teachers from Physical and Biological Sciences

The teaching aptitude scores were taken separately for the secondary school teachers from physical and biological sciences and accordingly they were categorized as having high, average and low teaching aptitude. The level-wise teaching aptitude of secondary school science teachers from physical and biological sciences is shown in figure 3.

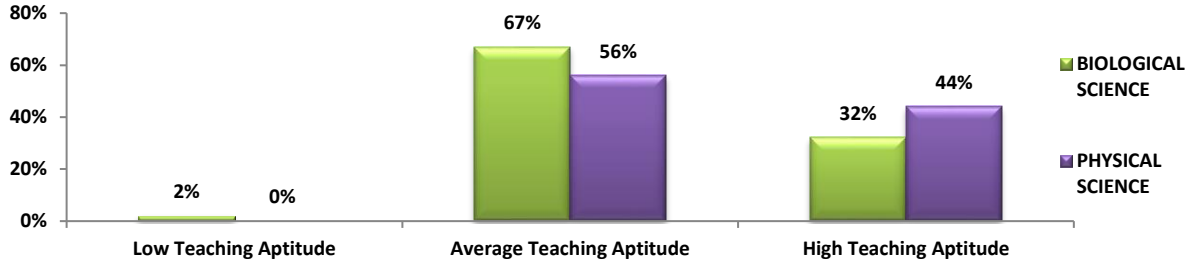

Figure 3 Status of Teaching Aptitude among Secondary School Teachers from Physical and Biological Sciences

From figure 3, it can be seen that among the secondary school teachers from biological sciences 2% have low, 67% have average and 32% have high level of teaching aptitude. Similarly among secondary school teachers from physical sciences none have low, 56% have average and 44% have high teaching aptitude. From above it can be inferred that very few secondary school teachers from biological and physical sciences have low level of teaching aptitude.

Effect of Course, Gender and their Interaction on Teaching Aptitude of Science Teachers

The effect of course, gender and their interaction on teaching aptitude of science teachers were analysed with the help of Two-Way ANOVA. The results are presented in Table 1 and 2.

Table 1 Summary of two way ANOVA for Course, Gender and their Interaction on Teaching Aptitude

Sources of Variance	df	SS	MSS	F	Remark
Course (A)	2	1220.018	610.009	9.370	p<0.01
Gender (B)	1	1225.805	1225.805	18.828	P<0.01
A X B	2	61.333	30.667	.471	p>0.05
Error	134	8723.931	65.104		
Total	140				

Table 2 Mean, SD and N for Teaching Competency by Course and Gender

Course	Gender	Mean	SD	N
B.Sc. B.Ed integrated, RIE, NCERT	**Males**	22.15	7.866	40
	Females	29.03	6.249	40
	Total	25.59	7.861	80
Two Year B.Ed RIE, NCERT	**Males**	16.93	8.988	15
	Females	21.50	9.736	20
	Total	19.54	9.565	35
B.Sc. B.Ed integrated Central University, Sagar	**Males**	15.92	9.920	13
	Females	24.50	7.833	12
	Total	20.04	9.821	25
Total	**Males**	19.81	8.864	68
	Females	26.18	8.218	72
	Males	23.09	9.087	140

From table 1 and 2 it can be seen that the F-value for course is 9.370 which is significant at 0.01 level of significance with df 2/134. Thus the null hypothesis that there is no significant influence of course on the teaching aptitude of secondary school science teachers is rejected. It is further seen that the mean teaching aptitude scores of secondary school science teachers doing B.Sc. B.Ed integrated from RIE, NCERT is 25.29 which is the highest, then is the mean teaching aptitude scores of secondary school science teachers doing B.Sc. B.Ed integrated from Central University, Sagar which is 20.04. The mean teaching aptitude scores of secondary school science teachers doing two year B.Ed from RIE, NCERT is the lowest and it is 19.54. Lower scores indicate low level of teaching aptitude and higher scores indicate higher level of teaching aptitude.

From table 1 and 2 indicate that F-value for gender is 18.828 which is significant at 0.01 level of significance with df=1/134. Thus, the null hypothesis that there is no significant influence

of gender on the teaching aptitude of secondary school science teachers, is rejected. Further, the mean score of teaching aptitude of male secondary school science teachers is 19.81 which is significantly lower than that of teaching aptitude of female secondary school science teachers whose mean teaching aptitude score is 26.18. From the above analysis it can be interpreted that the teaching aptitude of female secondary school science teachers is better than the teaching aptitude of male secondary school science teachers.

On further analyzing, table 1 and 2 indicate that the F-value for interaction between course and gender is 0.471 which is not significant at 0.05 level of significance with df=2/134. Thus, the null hypothesis, namely there is no significant influence of interaction between course and gender on teaching aptitude, is not rejected. Hence it can be inferred that there is not combined influence of course and gender on the teaching aptitude of secondary school science teachers.

Effect of Course, Stream and their Interaction on Teaching Aptitude of Science Teachers

The effect of course, stream and their interaction on teaching aptitude of science teachers was analysed with the help of Two-Way ANOVA. The results are presented in Table 3 and 4.

Table 3 Summary of two way ANOVA for Course, Stream and their Interaction on Teaching Aptitude

Sources of Variance	df	SS	MSS	F	Remark
Course (A)	2	1040.443	520.222	6.956	p<0.01
Stream (B)	1	66.124	66.124	.884	p>0.05
A X B	2	284.586	142.293	1.903	p>0.05
Error	134	10020.957	74.783		
Total	140				

Table 4 Mean, SD and N for Teaching Aptitude by Course and Stream

Course	Stream	Mean	SD	N
B.Sc. B.Ed integrated, RIE, NCERT	**Biological**	24.38	8.207	37
	Physical	26.63	7.490	43
	Total	25.59	7.861	80
Two Year B.Ed RIE, NCERT	**Biological**	21.62	8.884	16
	Physical	17.79	9.998	19
	Total	19.54	9.565	35
B.Sc. B.Ed integrated Central University, Sagar	**Biological**	21.90	11.818	10
	Physical	18.80	8.453	15

	Total	20.04	9.821	25
Total	**Biological**	23.29	8.956	63
	Physical	22.92	9.249	77
	Total	23.09	9.087	140

From table 3 and 4 it can be seen that the F-value for course is 6.956 which is significant at 0.01 level of significance with df 2/134. Thus the null hypothesis that there is no significant influence of course on the teaching aptitude of secondary school science teachers is rejected.

Further, table 3 and 4 indicate that F-value for stream is 0.349 which is not significant at 0.05 level of significance with df=1/134. Thus, the null hypothesis that there is no significant influence of stream on the teaching aptitude of secondary school science teachers, is not rejected. Further, although the mean score of teaching aptitude of secondary school science teachers from biological stream is 23.29 is more than the teaching aptitude of secondary school science teachers from physical stream whose mean teaching aptitude score is 22.92, but this difference is not significant. It may, therefore be concluded that the teaching aptitude of secondary school science teachers from biological and physical sciences is similar.

On further analyzing, table 3 and 4 indicate that the F-value for interaction between course and stream is 0.153 which is not significant at 0.05 level of significance with df=2/134. Thus, the null hypothesis, namely there is no significant influence of interaction between course and stream on teaching aptitude is not rejected. Hence it can be inferred that there is not combined influence of course and stream on the teaching aptitude of secondary school science teachers.

Impact of Teaching Aptitude on Classroom Transaction

Teaching aptitude was divided in to three levels namely, low, average and high according to the scores obtained by the secondary school science teachers. In order to find the effect of different levels of teaching aptitude on classroom transaction, the scores of classroom transaction were analysed using one way ANOVA. The results are presented in Table 5.

Table 5. Summary of ANOVA for Classroom Transaction of Secondary School Science Teachers having Low, Moderate and High Teaching Aptitude

	df	**SS**	**MSS**	**F-value**
Among	2	8875.263	4437.631	18.625*
Within	137	32641.559	238.260	

* Significant at 0.01 level.

Table 5 indicates that the F-value for study habits is 18.625, which is significant at 0.01 level with df equal to 2/137. Therefore, the null hypothesis, namely, "there is no significant impact on classroom transaction of students having different levels of teaching aptitude", is rejected. Thus, it can be inferred that the classroom transaction is dependent upon the teaching aptitude of secondary school science teachers.

Relationship between Teaching Aptitude and Classroom Transaction

The relationship of teaching aptitude and classroom transaction of secondary school science teachers was found out using Pearson's product moment correlation. The value of 'r' is presented in Table 6.

Table 6 Value of 'r' for Teaching Aptitude and Classroom Transaction

Variable	N	Mean	SD	r
Teaching Aptitude	140	23.09	9.087	0.489**
Classroom Transaction	140	110.46	17.282	

** Significant at 0.01 level.

Table 6 shows that the value of 'r' for teaching aptitude and classroom transaction is 0.489 which is significant at 0.01 level of significance. Since the value is significant hence the hypothesis namely "there is no significant correlation between teaching aptitude and classroom transaction" is rejected. There is found to be significant correlation between teaching aptitude and classroom transaction. There is positive correlation between teaching aptitude and classroom transaction, therefore it can be inferred that higher the scores of teaching aptitude of the secondary school science teachers higher will be the scores of classroom transaction, and vice versa.

Results

1. Very few secondary school science teachers from all the groups possess low level of teaching aptitude.
2. More than half of the male and female senior secondary school teachers possess average level of teaching aptitude.
3. Very few secondary school teachers from biological and physical sciences have low level of teaching aptitude.
4. There is significant influence of course on the teaching aptitude of secondary school science teachers. There is significant influence of gender on the teaching aptitude of secondary school science teachers. There is no significant influence of interaction between course and gender on teaching aptitude.
5. There is significant influence of course on the teaching aptitude of secondary school science teachers. There is no significant influence of stream on the teaching aptitude of

secondary school science teachers. There is no significant influence of interaction between course and stream on teaching aptitude.

6. There is significant impact on classroom transaction of students having different levels of teaching aptitude.
7. There is significant correlation between teaching aptitude and classroom transaction.

Conclusion

Since it is found that very few teachers have high teaching aptitude and that teaching aptitude can be develop by proper training, it is necessary that the aspect of developing good teaching aptitude is included in the teacher education curriculum. Further as it is found that teaching aptitude and classroom transaction are significantly and positively related there is need that before the teachers are selected for teaching jobs their aptitude test in conducted to ensure that the teachers who shape the future of the country transact the subject matter in the most appropriate manner possible.

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