

Reasoning Ability as a Determinant of Teaching Aptitude: A Study on Teachers Trainee Student of Durg-Bhilai Region

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Received: 8 December 2017 Accepted: 2 January 2018 Published: 15 January 2018

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Abstract

This research paper aims to highlight the importance of reasoning ability in selecting the students of teacher training colleges so that they are more likely to develop higher teaching aptitude during their training. On examining the reasoning ability score and teaching aptitude score of selected sample of student from teacher training colleges of Durg-Bhilai reason it was concluded that there was a high significant correlation between teaching aptitude and reasoning ability score of students. It was also concluded that reasoning Ability was able to explain about 45

15

Index terms—

1 Introduction

This study tries to examine one of these variables, teaching aptitude, that how we can select teachers who have a right aptitude for teaching. The importance of this study lies in the fact that Teaching is a highly skilled job and requires proper training and preparation on the part of teacher. Successful teachers offer convincing conversation starters, clarify alternatives, show us to reason, recommend conceivable headings, and urge us on. Fruitful educators are fundamental and loaded with energy. They want to instruct, as a painter loves to paint, as an author loves to compose, as an artist loves to sing. They have a genuine reason but then appreciate colossally what they do. They can get excited for their subject regardless of how often they have gone through it before. They vivify their subject and transcend the mechanical, dry, or routine educating. They propel themselves similarly as they push their understudies, and their courses wind up plainly critical learning encounters. The place and significance of the educator in a general public can never be over evaluated. These qualities are to be cultivated or could be inborn in an individual. It is then become a duty of governing bodies to select teachers having right aptitude of teaching. How this right aptitude can be found out is the main focus of this study.

In India the Bachelor of Education degree is a prerequisite in most of the state and Central run schools. The candidate selected to become teacher trainee have to appear in a Pre B.Ed examination administered by different agencies and Department in Center and States. Most of the pre B.Ed exam covers General Knowledge, Languages and Subject Knowledge. It gives very less weight age to taste the critical and reasoning ability of the students who aspire to become teacher trainee. The lack of importance given to reasoning ability in the entrance exam might be a factor due to which a aspiring teacher is not able to deliver a high quality education to children.

In the next section of this study various aspects of reasoning ability and teaching aptitude are discussed. The literature covering the aspect of reason and teaching aptitude are analyzed critically to determine the factor that might vary reasoning skill of the individual and the teaching aptitude of teacher trainee.

Next section discuss the blue print to conduct this study. It signifies the use of Descriptive research design to come to the conclusion. The objective of thee research are designated in this section followed by Hypotheses and Sub Hypotheses. Later part of this section deals with the data collection methodology and the description of sampling design employed. It also describe the data collection tools which was mainly the questioners clearly indication the ration of choosing such tool and thee reliability and validity of the tool. It is followed by the finding of the statistical methods that were used in arriving at a conclusion. The last section of the study comments on

4 B) TEACHING APTITUDE

45 the result that were obtained after applying various statistical method .It is ended by the concluding remarks on
46 the results obtained with the implication and scope for future work in the field.

47 2 II. Literature Review

48 The previously published research on the present topic can be segregated as the one describing plenty of
49 government activities to give access to essential primary schooling might be in progress, however issues of value,
50 quality and access to all remain area of concern -especially in small states like Chhattisgarh. Children in provincial
51 area are being denied of value training, attributable to variables like absence of able and committed teachers,
52 lack of teaching aptitude and absence of course books among others.

53 A different aspects of reasoning ability and other describing the facets of Teaching Aptitude.

54 3 a) Reasoning Ability

55 Reasoning Ability is the ability to think about something in a logical way in order to form a conclusion or
56 judgment. In a comprehensive dictionary of Psychological and Psychoanalytical terms Reasoning is defined as
57 "The form of thinking which find its completes expression in logical forms (Whether the conclusion reached are
58 valid or not).The reasoner is usually aware that the judgment (conclusion) is dependent upon other judgment
59 (the premises).

60 It is also defined as Problem solving ability (by English and English).

61 Nisbett et al. (1987, p.238) 1 studies showed that if a training is given to improve the reasoning ability of
62 an individual the reasoning ability can be enhanced substantially.. Kyllonen, Christal in (1990) , investigated
63 the relationship between reasoning ability and working capacity.They also concluded that there is a significant
64 positive correlation between reasoning ability of an Individual and working capacity.

65 After these studies it was thought by Schmitt and Fischer (20093) 3 to determine that whether reasoning
66 skill can be taught for this they conducted an experiment to enquire inferential reasoning in Baboons. They
67 experimented it with a bottle of food that Babbons like, it was done to infer that whether reasoning skill can
68 improve through teaching. The results of the experiment were identical to the same experiment conducted on
69 Apes and other monkeys. From this understanding it was learned the reasoning skill can be improved through
70 training in humans also.

71 Ben-Chaim et al. (2000) 4 Researched the importance of reasoning skills for development of innate capabilities
72 of students. There recommendation was that a thinking skill of superior level is essential to explore student's
73 intelligence and abilities, that will be a critical factor in every aspect of work in the society. Barak In a more recent
74 study Mukhopadhyay (2013) 7 investigated the need to analyze scientific aptitude. He concluded that scientific
75 aptitude can act as the measure of professional success and it can be measured by designing the aptitude test for
76 various construct.

77 4 b) Teaching Aptitude

78 Aptitude is our capacity to acquire proficiency, with specifying it's composition. The term aptitude is used in
79 several ways. First, it is used to denote a combination of traits and abilities, which result in a person being
80 qualified for some type of occupation or activities. Second, it is intended to convey the idea of discrete unitary
81 characteristics, which is important in various degrees in a variety of occupation and activities. Aptitude for
82 teaching is a condition or set of characteristic including knowledge, understanding, an attitude regarded as
83 symptomatic or indicative of individual's ability to acquire with training abilities for teaching work.

84 Sharma (1971) 8 , estimated predictor of teachers effectiveness and their mutual relationship at elementary
85 school level before and after one year of training. He found that Teaching aptitude is a significant predictor
86 of teacher effectiveness, and the teacher trainee having high teaching aptitude tends to become more effective
87 teacher than the one having low teaching aptitude.

88 Adval (1952) 9 investigated into qualities of teachers undergoing teachers training. His main aim was to
89 to investigate the role of gender in measuring teaching aptitude. He conclude that Controlling for extraneous
90 variable different genders have different measure of teaching aptitude. Another astounding finding was that
91 Female teacher trainees have greater Teaching Aptitude than Male Trainees.

92 Ekstrom, Ruth B. (1978) 10 . Identified the factors affecting student achievement and the relationship between
93 Teacher Aptitudes, Teaching Behaviors and pupil outcomes. They identified the major components which affect
94 student achievement as, teacher knowledge and teacher aptitude.

95 Banerjee (1956) 11 investigated that is there any relationship between teaching practice and theoretical studies.
96 The results of the study showed that there was a positive correlation between practice teaching and theoretical
97 studies with general intelligence and teaching aptitude.

98 **5 III.**

99 **6 Methodology**

100 The broad methodology adopted for the study is descriptive in nature. The study is conducted during the period
101 of three months during which the data was collected from teacher trainee student on their teaching aptitude and
102 reasoning skills.

103 **7 a) Objective of the Study**

104 The teaching aptitude can be thought of as the ability of teacher trainee student to conduct effective teaching. To
105 identify the level of teaching aptitude it was necessary to measure the teaching aptitude of the Teaching Trainee
106 college students of Chhattisgarh region. So first objective was-1. To measure the Teaching aptitude of the
107 Teaching college students of Chhattisgarh region. 2. Since it was required to find the relation between reasoning
108 ability of the student and its teaching aptitude the second objective was 3. To measure the reasoning ability
109 of the Teaching college students of Chhattisgarh region. 4. Since a large proportion of teacher trainee students
110 were female it was required to identify that is there any difference between the teaching aptitude and reasoning
111 ability of male and female trainee students, this proportion gave rise to the next two objectives as 5. To identify
112 the difference in Teaching aptitude of male and female Teaching college student of Chhattisgarh region. 6. To
113 identify the difference in reasoning ability of male and female Teaching college students of Chhattisgarh region.
114 7. The primary objective of the study was to identify the relationship between teaching aptitude and reasoning
115 ability of teacher trainee student for this it was also necessary to investigate that if there is a relationship, then,
116 does it hold good for male and female separately. So the next three objective focus on this investigation as
117 8. To discover the relationship between reasoning ability and Teaching aptitude of Teaching College student of
118 Chhattisgarh region. 9. To discover the relationship between reasoning ability and Teaching aptitude of Male
119 Teaching College student of Chhattisgarh region. 10. To discover the relationship between reasoning ability and
120 Teaching aptitude of Female Teaching College student of Chhattisgarh region.

121 **8 b) Hypotheses**

122 Hypotheses are assumption about the population of interest based on the objective of the study.

123 Since it was required to investigate that do the teaching aptitude as well as the reasoning ability of Male and
124 Female teacher trainee student differ in magnitude the first two hypotheses were required to be checked to fulfill
125 these objectives. The relationship between reasoning ability and teaching aptitude were assumed to be non-existing
126 and to investigate it following Hypothesis were formed. Firstly to check for whole population and then to check
127 for sub population of Male and Female teacher Trainee Students.

128 **9 c) Sampling Design**

129 In this study probability sampling design was used. The sampling design was mixed sampling, consisting of
130 stratified sampling at first stage and then using simple probability random sampling to select sample element
131 from each strata. The sampling frame was the roll list of enrolled student studying in first year of teacher's
132 training and engineering course. The, sampling frame was the list of student studying in first year of teaching
133 courses in Durg district. First stage strata comprises of male and female student in the total sample. At the last
134 stage random sampling was used to identify the sample elements from each sub strata. The break of the sample
135 items according to gender, will be as follows-

136 The size of various sample units were decided on the basis of their respective share in population. On analyzing
137 the population it is seen that in Bachelor of Education course the Female are having much greater enrolment
138 as compared to Male. The population of teacher trainee student studying in first year of Bachelor of Education
139 course is 14,950, in Chhattisgarh state, as per National Council of Teacher Education (NCTE), Western Regional
140 Committee (WRC) figures. From the same report it has been observed that enrollment of teacher trainee students
141 in First year of Teacher Trainee course, awarding a degree of Bachelor of Education, comes out to be 4900. in
142 Durg-Bhilai region. As the scope of study covered Durg-Bhilai region the appropriate sample size was determined
143 accordingly, as 250 covering approximately 5 % of the population.

144 **10 d) Data Collection**

145 After zeroing out the ideal sample size, the roll list of the student in first year of B.Ed courses as obtained to act
146 as a sampling frame. Initially the first IV.

147 **11 Data analysis and Results**

148 **12 a) Checking the Normality assumption**

149 In order to perform statistical inferential analysis using parametric tests, the critical assumption is that the
150 population follows the normal distribution. While Stratified Probability Sampling, where the strata were Male
151 and Female Teacher Trainee Student. The Normality Assumption was checked in the two strata, by plotting the

15 CONCLUSION

152 Histogram and conducting Shapiroi -Wilk test for the two variables Reasoning Ability and Teaching Aptitude, so as to confirm the applicability of Inferential Statistical Technique. Shaipro-Wilk test result confirms the 153 approximate Normal data for Reasoning Ability and Teaching Aptitude of both of the groups of Male and 154 Female Teacher Trainees. While observing the descriptive statistics gender wise it has been found the female 155 teacher trainee have a mean score of 7.39 with a standard deviation of 2.2 for the Reasoning Ability and female 156 teacher trainee have mean score of 16.3 with the standard deviation of 5.2 for the Teaching Aptitude score. The descriptive 157 statistics of male student shows that for the Reasoning Ability score they have a mean value of approximately 158 8 with a bit higher standard deviation of 3.7 as compared to female group for the same variable. In the case 159 of teaching aptitude male students have mean score of 16.13 with a standard deviation of 5.45. The first two 160 research question were answered by referring the descriptive statistics of male and female group, and students as 161 a whole. While analyzing the descriptive statistics it was confirmed that there was not much of the difference in 162 the mean score of Male and Female teacher trainee student score of either in the Reasoning ability score or in the 163 teaching aptitude score. This conclusion also directed us to investigate our 3 rd and 4 research question of finding 164 whether significant difference exist between male and female teacher trainee student regarding their reasoning and 165 teaching aptitude score. On conducting independent sample 't'test between male and female students on their 166 score of reasoning ability and teaching aptitude, it was found that there was no significant difference that exist 167 between reasoning ability of male and female student and neither there was any significant difference between 168 teaching aptitude score of male and female teacher trainee students. Hence both of the Hypothesis H 1 and H 2 169 were accepted. There are indications that there is a strong positive correlation $r=0.671$ between reasoning ability 170 score and teaching aptitude score of the teacher trainee students thesis correlation was found significant at 0.01 171 level. On splitting the dataset between groups the correlation analysis was done again and the result are given 172 in the following table. The result shows that there is a strong significant correlation between Reasoning Ability 173 score and Teaching Aptitude score of both of the groups of male and female students. The correlation is strong 174 and positive and it is even stronger for Male teacher trainee students with $r=0.722$.For female students $r=0.60$. 175

176 13 V. Predicting Teaching Aptitude on the basis of Reasoning 177 Ability Score

178 During correlation analysis it was observed that there was high degree of significant correlation between Reasoning 179 Ability Score and Teaching Aptitude Score of Teacher Trainee Students. It was then desired to investigate that 180 to what extent we can predict the teaching aptitude of student on the basis of reasoning ability score of students. 181 For this a regression analysis was conducted where reasoning ability score was taken as predictor variable and 182 teaching aptitude score was taken as a dependent variable. The result are given in the following table. The 183 coefficient of model the constant term and the coefficient of reasoning ability was found to be significant.

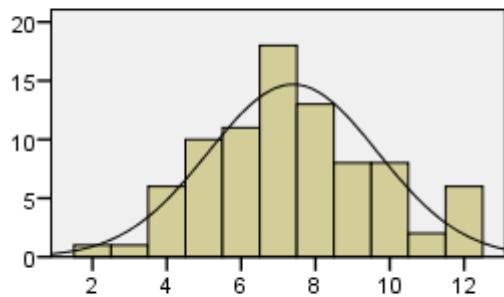
184 14 VI.

185 15 Conclusion

186 There has been a through debate in improving the quality of teaching in Primary and Secondary Schools. One 187 way to o this is to select those teacher as a participant in Teacher Training colleges who have a higher aptitude 188 to teaching. To achieve this purpose the regular exam conduct to select student teacher trainee should undergo 189 a major reformation.

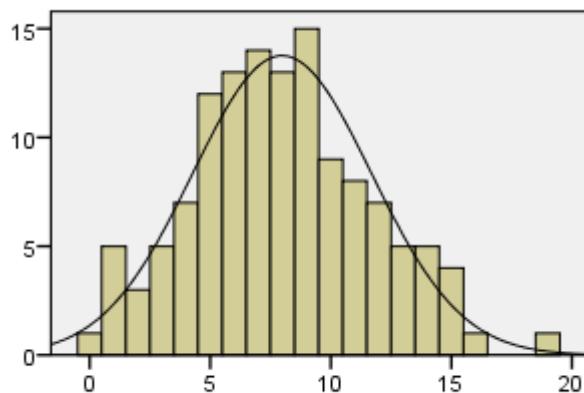
190 The importance of reasoning ability has been widely accepted as a parameter to improve professional efficiency. 191 The research conducted on teacher trainee students shows that the male and female teacher trainee do not differ 192 in their teaching aptitude level and also they do not differ in their reasoning ability level. It has also been 193 concluded there seem to be high and significant correlation between teaching aptitude and reasoning ability of 194 thee students. Owing to this conclusion since direct questions of teaching aptitude could not be asked in the 195 entrance examination of teacher trainee it seems if the emphasis is given to the reasoning ability question in the 196 entrance then there are higher chances that we will be able to select teacher trainee student who might develop 197 higher aptitude for teaching during their training.

198 It can also be concluded that since the reasoning ability score was able to explain approximately 45 % 199 of variation in the teaching aptitude score the weight age of reasoning ability in the entrance test should be 200 somewhere close to 45 % of the total weight age. ¹



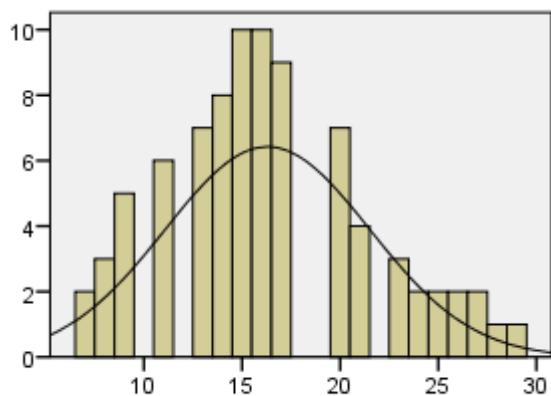
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Figure 1: H 1 :



345

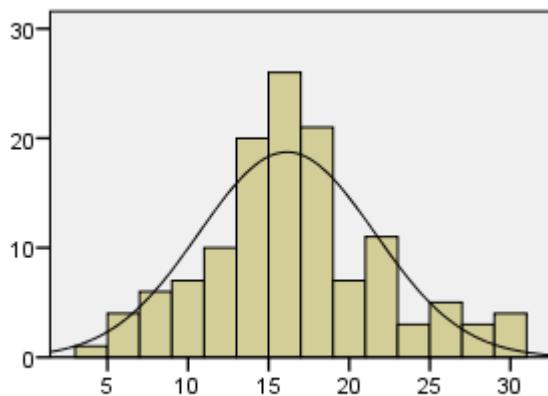
Figure 2: H 3 : 4 : 5 :



1

Figure 3: Fig. 1 stage

15 CONCLUSION



2

Figure 4: Fig. 2 :

Variable	Gender of Teacher Trainee	Shapiro-Wilk Statistic	Df	sig
Reasoning Ability	Female	.967	84	.030
Teaching Aptitude	Male	.986	128	.234
The	Female	.960	84	.010
Normality assumption	Male	.973	128	.013

is further strengthened by referring the approximate bell shaped

Figure 5: Table - 1

2

Variable	N	Minimum Score	Maximum Score	Mean Score	Std. Deviation
Reasoning Ability	212	0	19	7.75	3.228
Teaching Aptitude	212	4	30	16.20	5.347

Figure 6: Table 2 :

3

Gender of Teacher Trainee	Variable	N	Minimum	Maximum	Mean	Std. Deviation
Female	Reasoning ability	84	2	7	7.39	2.282
	aptitude	84			16.30	5.218
Male	Reasoning Ability	128	0	4	7.98	3.711
	Teaching aptitude	128	19	30	16.13	5.450

c) The Research Question

Figure 7: Table 3 :

4: Independent Samples Test					
Equal Variance Not Assumed	t-test for Equality of Means				
	T	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Reasoning Ability	1.418	209.22	.158	.584	.412
Teaching Aptitude	-	183.07	.825	-.165	.746
		.221			

d) Correlation Analysis

Figure 8: Table -

		Resoning Ability	Teaching Aptitude
Resoning Ability	Pearson Correlation	1	.671 **
Teaching Aptitude	Pearson Correlation	.671 **	1

Figure 9: Table - 5

6

Reasoning Ability

Teaching Aptitude

[Note: **Correlation is significant at the 0.01 level(2-tailed).]

Figure 10: Table 6 :

8: Model Summary				
ModelR	R Square	Adjusted R Square	Std. Error of the Estimate	
1	.671	.451	.448	3.973
a				a. Predictor: (Constant), Reasoning Ability

Figure 11: Table -

9

Model		Sum of Squares	df	Mean Square	F
	Regression	2718.782	1	2718.782	172.236
1	Residual	3314.898	210	15.785	
	Total	6033.679	211		

a. Dependent Variable: Teaching Aptitude

Table-10: Coefficients a

Model		Unstandardized Coefficients		T	Sig.
		B	Std. Error		
1	Constant	7.584	.711	10.67	.000
	Reasoning Ability	1.112	.085	1.124	.000

a. Dependent Variable: Teaching Aptitude

Figure 12: Table 9 :

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