

Do the Future Teachers of Haryana Have the Aptitude to Teach?

A Study of Government Teacher Trainees
of Gurgaon and Mewat



Submitted by:

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Abbreviations

DIET: District Institute of Education and Training

D. Ed.: Diploma in Education

GETTI: Government Elementary Teacher Training Institute

RTE: Right to Education

TET: Teaching Eligibility Test

Abstract

This study examined the teaching aptitude of future teachers of Haryana. The study samples consisted of teacher trainees pursuing the Diploma in Education in District Institute of Education and Training, Gurgaon (N-174) and Government Elementary Teacher Training Institute, Mewat (N-101). The samples were representative of the students who will teach in 12 other districts. The Teaching Aptitude Test Battery developed by Singh and Sharma (2011) was administered and teaching aptitude was found to be average, even though students scored significantly low on mental ability and adaptability components of the test. On correlating percentage in boards, on the basis of which students are granted admission in the institute, with teaching aptitude as well as with mental ability, a positive but weak correlation was found in both cases. No significant correlation was found between previous educational qualifications and teaching aptitude, as well as between age and teaching aptitude, although adaptability positively and significantly correlated with age. Further, contrary to many of the previous studies, no statistically significant difference was found in the teaching aptitudes of male and female student teacher trainees, though the females' mean was higher than that for males.

Introduction

60% of the children in fifth standard in government schools of Haryana can't do simple division!¹

The ASER Report² 2011 not only indicates meager learning outcomes, but also a downward spiral in the quality of school education in India. The key factor contributing to the quality of school education is the quality of teachers. This has been verified by studies as well as recognized by the government of India.

A study conducted by Miguel and Barsaga (1997, p.120) considered factors affecting pupil performance, investigated the variables of teacher, student, parents and community, and concluded that the teacher quality was the key factor. Châu, (1996) found that particularly in the initial stages of education, and especially in the rural areas, the quality of education depends on the quality of teachers.

With National Curriculum Framework on Teacher Education (NCFTE), as a part of Right to Education (RTE) Act coming into effect in 2009, there has been an increasing recognition of the importance of teacher education, on the stream of thought that: only quality teaching can provide quality education. The 12th five year plan too recognizes that "Teachers and Teaching are central to School Quality."

While there is emphasis for teacher education schemes and frameworks on quality teacher training for transforming primary education, the approach is unidirectional i.e. from teachers to the students. There is hardly any stress on the *two-way* causal relationship between learning outcomes and the quality of teachers. The underlying assumption by the policymakers is that quality teaching is a result of two years of quality training only and previously completed twelve years of schooling has no role to play in shaping of student teachers. Such assumption may result from the social hierarchy that rigidly distinguishes between the teacher and the student, making the policy-makers unable to recognize the fact that the future teachers are essentially the students from the same government schools which have poor learning outcomes. The teacher education institutes are not magical factories that'll produce the living encyclopedias in merely two years!

² Assessment Survey Evaluation Research

It is in 2012, that the guidelines on restructuring and revitalizing DIETs in the 12th Plan draft mentions about the interdependence between continuous teacher professional development and school improvement, but only to base its focus on the former. It is least realized that teachers are being made since the day they are born, not just when they enroll in a two year diploma in education course. It is yesterday's students who become today's teachers and today's students that will become tomorrow's teachers. The teachers are essentially students, and students are prospective teachers: the roles are interchangeable and complementary.

The concentrated view of teacher training is also reflected in another problem: teacher quality seems to be most frequently measured in terms of academic credentials. Academic achievement links the twelve years of schooling with the two years of pre-service training in elementary education. The basis for admission in Diploma in Education in government-run District Institutes of Education and Training in Haryana is percentage in boards³, which is a terminal evaluation of the specified syllabus, with no measurement of teaching aptitude that would capture the multiplicity of experiences of everyday life that forms characteristics symptomatic of performance as teachers. There is little or no evidence that higher credentials or pre-service training lead to better quality of teaching. In fact, studies show that even achievement in degree exams don't correlate with teaching aptitudes, let alone high school exams! Schiefelbein & Simmons (1981) reviewed research in more than 20 countries, and found that teachers without certificates in educational training had students who performed as well as those with certificates in 19 out of 32 studies. They concluded, "Teacher certification should be reviewed with caution as a way to increase student achievement". They also found that years of teacher experience was a significant determinant of student achievement in only 7 out of 19 studies, and that more years of teacher training was not related to higher student achievement in 5 out of 6 studies. Further, Sajan, 2000 found that the level of achievement in degree exam has no influence in predicting teaching aptitude.

The recently introduced Teaching Eligibility Test hardly measures anything different than what the degree/diploma exams measure: the knowledge on the syllabi - English, mathematics and

³ 12th class examination

environmental science, and child development and pedagogy. The test assesses only the knowledge component, hardly measuring teaching aptitude. Nevertheless, a staggering 93% of aspiring school teachers failed to clear the Central Teacher Eligibility Test (CTET) 2012!

Teaching aptitudes testing of student teachers will capture the influence of the learning outcomes in government schools teachers went to, the training they received in the teacher training institute, multiplicity of experiences in everyday life as well as measure the potential to teach, along with standing on its various components. This is important in the light of the aforementioned: ignorance of multiplicity of experiences during twelve years of schooling in the formation of teachers in schools and focus on certification, apart from the dysfunctional status of teacher training institutes, which we will review in our section on review of literature

Background

Defining Terms: Aptitude

Due to subtle differences between the various psychological constructs, a cobweb of misconceptions has developed about the construct “aptitude”. Often it is used as a synonym of intelligence, personality, capability and innate ability.

But according to the Warren's Dictionary of Psychology, aptitude is a “a condition or set of characteristics regarded as symptomatic of an individual’s ability to acquire to acquire training in some (usually specified) knowledge, skill, or set of responses such as the ability to speak a language, to produce music etc.”

The definition clarifies that:

Aptitude is not necessarily innate. It is “the ability” to acquire, reflecting cumulative influence of the array of experience in everyday life. Essentially, aptitude is the result of both heredity and environment

The concept of aptitude is broad. It embraces any characteristic that predisposes to learning, which might include personality, intelligence, and knowledge. But the point is it is not solely reducible to any one of these. Simply defined, it is the potential to acquire or perform in a new situation.

Defining Terms: Teaching aptitude

Teaching aptitude is a condition or set of characteristics that estimates the extent to which the individual will profit from the specified course of training, or forecast the quality of his/her achievement in a new situation. According to the instrument that the study employs, the Teaching Aptitude Test Battery by Singh and Sharma, teaching aptitude includes the following five areas:

- a) Mental ability
- b) Professional information
- c) Adaptability
- d) Attitude towards children
- e) Interest in Profession

Review of literature: Teaching aptitude

Table 1 Previous studies conducted, both inside and outside India

Author	Year	Teaching aptitude is significantly correlated with
Morsh, Joseph E.; Wilder, Eleanor W. (1900-54) ; Sharma '71; Vashishta '73, Mutha '84; Singh '87; Vyas '90; Beena '95; Vilas '12	1900-2012	Teacher effectiveness
Ekstorm	1974	Student achievement
Kukreti	1999	Teaching success
Ken and Kleine	1995	Teacher competency factors
Vashishta	1973	Attitude towards teaching
Banerjy; Thakkur	1956, 1977	General intelligence
Perveen	2006	General teaching competence, professional interest and academic achievements.

Review of literature: District Institutes of Education and Training (DIETs)

While the NCERT came up in the 1960s and the State Councils of Education Research and Training (SCERTs) were established in 1970s, the District Institutes of Education and Training (henceforth DIETs) were envisioned only in National Policy of Education (1986.). They were created by the Government of India, Ministry of Human Resource Development in the early 1990s when elementary and adult education systems became too vast to be adequately supported by national and state level agencies alone. DIETs were created through a centrally supported scheme and following the guidelines suggested in the 'pink book' (Government of India, 1989). Immediately accountable to the District Board of Education (DBE), DIETs have been given functional autonomy-academic, administrative and financial. The State Government/UT Administration exercises its supervisory functions through the State Council of Education and Research Training (SCERT) and SRC (State Resource Center). The main tasks of these 'Academic Lead Institutions' in the district are:

- Quality teacher training, leading to high learning levels among students

- Improving pedagogy and making classroom learning interesting
- Developing Curriculum and academic material such as child-friendly textbooks
- Planning and management of primary, adult and non-formal education of the district
- Conducting research, developing low & no-cost gadgets, supporting innovation
- Evaluating students, teachers, programs and institutions
- Using technology in education

The performance of DIETs across the country has been abysmal, with little engagement in the above tasks. The poor educational achievement among students in government schools is a telling example. Teacher Education in the 12th Plan: Guidelines on restructuring and revitalization of DIETs as on February 12, 2012 accepts that DIETs have not played a meaningful role in state education system. It expresses the need to reformulate the vision of DIETs so that they can contribute to fulfilling the RTE in matters relating to continuous teacher professional development, school support and improvement.

Azim Premji Foundation's Status Report on DIETs 2010 examined the current dysfunctional status of DIETS across the country, and found poor infrastructure, chronic vacancies, dysfunctional programs, lack of innovation and a top down approach as key problems plaguing the system.

Some of the issues with teacher education, as identified by UNESCO that are still prevalent are: there is a mismatch between teacher education programmes and the availability of teachers, time available for pre-service education of teachers is inadequate for development of necessary attitudes and values and elementary teacher education is manned by personnel trained for secondary education.

One of the major functions of the DIET is the training of elementary school teachers, both pre-service and in service. The study focuses on the pre-service teachers, who are pursuing Diploma in Education, a full time elementary teacher education course of two years in DIET, Gurgaon and Government Elementary Teacher Training Institute (GETTI), Mewat which although is functionally same in terms of pre-service training as any other DIET of Haryana, hasn't been upgraded to a DIET.

Teacher education and teaching aptitudes are intricately related to students' learning outcomes. Today's students become tomorrow's teachers. Today's teachings develop teaching aptitudes, and generate learning outcomes. Teachers' education adds to the teacher-making process. Teachers teach, and produce learning outcomes.

Students' Outcomes → Student Teachers → Teachers → Students' Outcomes



Teachers' Aptitude ← Teachers' Education ← Teaching Aptitude

As defined previously in the paper, teaching aptitude is a broad term, encompassing any characteristic that predisposes to learn. The student outcomes in relevant areas as well as teacher education therefore itself predisposes to the formation of teacher aptitude.

With the poor status of the teacher training institutes, the quality of future teachers is underscanner. A study of the teaching aptitudes, especially of the II year students will indeed give us an output-oriented status report of DIETs.

Purpose of the paper

Objectives

1. To measure the teaching aptitude of teachers of District Institutes of Education and Training, Gurgaon (Haryana) and Government Elementary Teacher Training Institute, Mewat (Haryana) in general and in relation to its five components: mental ability, attitude towards children, professional information, interest and adaptability.
2. To compare Teaching Aptitudes of males and females in DIET, Gurgaon and GETTI, Mewat
3. To find correlation between aptitude and achievement in boards.

Methodology

Sample: 275 students

Using random sampling, 174 student teachers undergoing D. Ed. Course in DIET, Gurgaon and 101 in GETTI, Mewat were sampled. These student teachers will be teaching in elementary schools of 14 districts of Haryana.

Instrument

The Teaching Aptitude Test Battery (T A T B) developed by Singh and Sharma (2011) was administered to the above sample in the start of the second semester of the annual academic year. The tool consists of the following five dimensions

- (1) Mental ability
- (2) Attitude towards children
- (3) Adaptability
- (4) Professional information and
- (5) Professional interest.

Though originally standardized in Primary teacher training institutes of Bihar, the norms for the test have been revised on the basis of the feedback from psychologists, counselors and teacher educators for a number of years.

The study uses qualitative as well as quantitative analysis. Alongwith the aforementioned aptitude test, semi-structured interviews were conducted and naturalistic observations were recorded. The results have been compiled in relation to the z scores as calculated by the mean and the standard deviation of the normative population. The study has applied t tests and product moment correlation. The level of significance has been set at 0.05.

Study Profile: DIET, Gurgaon

Gurgaon is the second largest city in the Indian state of Haryana, one of Delhi's four major satellite cities and part of the National Capital Region (India). Gurgaon has the 3rd highest per capita income in India after Chandigarh and Mumbai. The provisional census statistics has revealed that literacy rate of Gurgaon is 84.40 percent; male literacy rate is 90.27% while the female literacy rate is 77.64%. Sex ratio is 853 per 1000 male.

District Institute of Education and Training (DIET), Gurgaon is one of the 17 DIETs of Haryana. It is located in the same campus as SCERT, Haryana that coordinates with DIETs of Haryana, seeks to implement new educational techniques and methodologies and imparts guidance. One of the major functions of the DIET is the training and the orientation of elementary school teachers, both pre-service and in service. The study focuses on the pre-service teachers, who are pursuing Diploma in Education, a full time elementary teacher education course of two years.

Methodology:

Teaching Aptitude Test Battery by Singh and Sharma (2011) Hindi Version was administered on 174 randomly selected pupil students pursuing Diploma in Education (D. Ed.); Out of which, 28 of which were male, and the rest were female students; 112 were I year students and 62 II years.

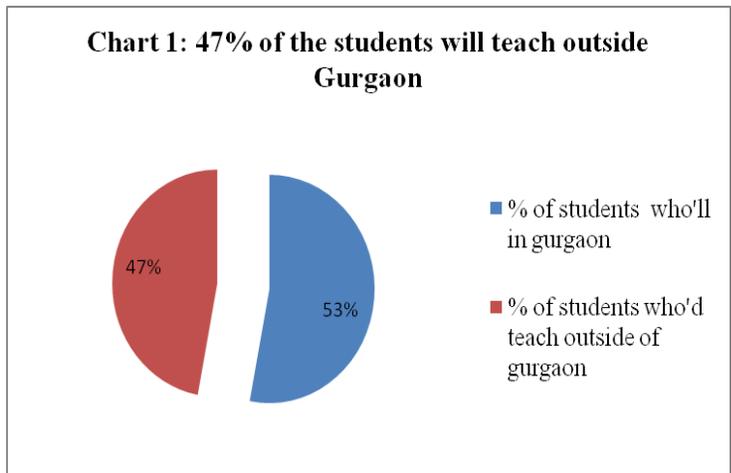
TABLE 2: SCORE SUMMARY (DIET, Gurgaon)

SUB AREA	MEAN	STANDARD DEVIATION	SIGNIFICANCE (IN COMPARISON TO THE NORMATIVE POPULATION)	INTERPRETATION
MENTAL ABILITY	17.50	4.71	SIGNIFICANTLY BELOW	BELOW AVERAGE
ATTITUDE TOWARDS CHILDREN	15.70	1.67	SIGNIFICANTLY ABOVE	ABOVE AVERAGE
ADAPTABILITY	16.16	2.16	SIGNIFICANTLY BELOW	BELOW AVERAGE
PROFESSIONAL INFORMATION	24.39	2.05	SIGNIFICANTLY ABOVE	ABOVE AVERAGE
INTEREST IN PROFESSION	8.28	1.73	SIGNIFICANTLY ABOVE	AVERAGE
TOTAL	82.03	7.01	SIGNIFICANTLY ABOVE	AVERAGE

Data Analysis

Sample characteristics: 96.75% of the students would like to teach in government schools, out of which 68.84% in government run schools, 26.17% in government specified schools (KVS, NVC), 4.69% in government aided and 0.6% in municipal run schools. 2 students wanted to teach in private school, one wanted to be a social worker, and one said “whichever pays more”! Only one student was interested in taking remedial classes after the school hours in government school. On interviewing, it was found that most students were interested in teaching in government schools because of better pay. Other responses were job security, paying back to the society and high job vacancies. Few other reasons that can be speculated are modeling⁴ in the government schools they went to, Hindi speaking nature of the population, no incentive for performance and no accountability.

⁴ Modeling is a type of learning that happens as a result of observing the behavior of others



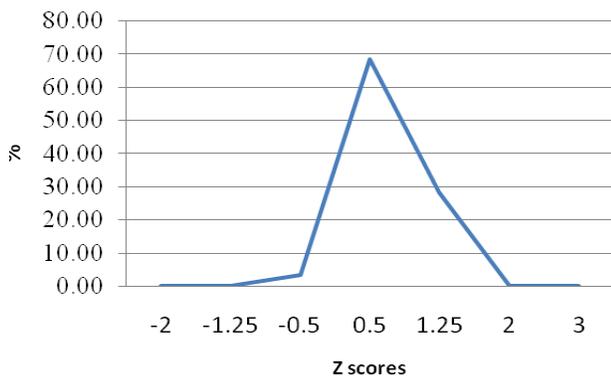
The competition for pursuing D. Ed. in DIET, Haryana is tremendous. This year more than two lakhs candidates have applied against the 20150 seats in various colleges and institutes in Haryana for JBT⁵/D Ed course. DIET, Gurgaon is one of the most reputed DIETs of Haryana. It is like the SRCC of DU⁶! 80-85% and above scoring students get the

golden opportunity of studying at this DIET. 47.7% of the sample of 110 students had come from some other district of Haryana, where DIET existed, like Mewat, Rewari, Pataudi, Faridabad, Rohtak, Sonapat, Bhiwani, Ambala, just to receive diploma from a more reputed institute.

Most of these students would be teachers in their respective districts. In this sense, the sample is representative of the future teachers in various districts, not just Gurgaon.

The average age was 18.95.

Chart 2: Teaching Aptitude (DIET, Gurgaon)

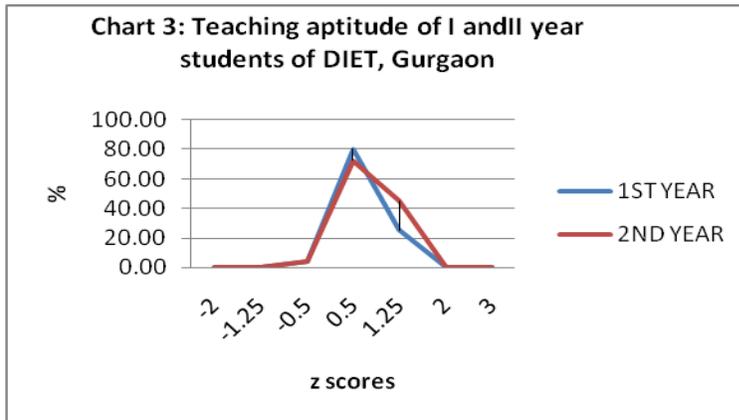


Teaching Aptitude: The average teaching aptitude of the pupil students, though in the average range, is significantly above the normative population. The normative population mean is 76.5 whereas that of DIET, Gurgaon students is 82.03 (out of 120).

⁵ Junior Basic Training

⁶ Shri Ram College of Commerce of Delhi University

Statistically insignificant difference was found in the teaching aptitude of the first and the second year students. But there were significantly more (20%) II years in the above average range of the teaching aptitude than the I years. This was at first assumed to be the effect of TET⁷ coaching, for I was told that the students receive TET coaching every morning. Later, when inquired it was found that the TET



coaching had started only a fortnight before. Second obvious plausible explanation was that one year of education in the teacher training institute must have caused the difference. And in fact, it was found that there are subjects like educational psychology, teacher function and education philosophy in the II year,

which must have led to the development of aptitude. This finding corroborated with students' interview responses: the psychology teacher is the best in the college. The specificity of experience due to exposure to ideas revolving around teaching and teacher formed a major cause of II year students' responses, causing them to perform better.

There weren't any statistically significant differences between I and II years in their scores on any of the five sub-components, except 'adaptability'.

Part Scores:

Component of Mental Ability	Average
Verbal Reasoning	6/10
Number Series	8/10

⁷ Teacher Eligibility Test

Word Problem	3/10
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Mental ability: Mental ability comprised of questions about verbal

reasoning: analogy and word problems as well as numerical series. In verbal reasoning questions, students were to understand concepts framed in words, and draw a simple analogy. It was aimed at the evaluation of the student's ability to abstract, generalize, and to think constructively, rather than at simple fluency or vocabulary recognition. In number series, students were to recognize a pattern in the number series and fill in the following number. This tested the basic mental ability required to teach at the elementary level.

The mean mental ability score was 17.04 (out of 32), which was significantly below the mental ability of normative population. Their numerical ability scores were better than scores on analogy and word problems, with mere 3.47/10 average on word problems. Mental ability of most of the students fell in the below average range. In fact, 14% of the students, who had an above average teaching aptitude, had well below average mental ability!

I and II years' mental ability scores were compared, t-testing procedures revealed no significant difference. Though there were very slightly more II year students were found in the above average category, but so was the case in the below average category. Thus, in most probability low mental ability more or less reflects the inability to develop mental ability at the school level itself, with no substantial contribution of the teacher education.

Attitude towards Children: Students rated 20 statements about children on a scale of 0 to 5. The average on this component was above the normative population. In fact, only 2 students fell in the below average range.

Adaptability: This section contained 28 multiple-choice questions, wherein the students had to complete the incomplete suggestions. Students' scores ranged from 10 to 21, with 37% of the students falling in the below average range. There was a significant difference in the teaching aptitude of I and II year students, but not even a single student fell in the above average range of the normative population.

Professional information: This section contained 28 incomplete statements. The student was required to complete each with any of the two sub-items. Students' scores were the highest on this component. Only one person fell below the average.

Interest in Profession: This section consisted of 12 multiple choice questions. The students' interest was found to be significantly above the average of the normative population, with most of the students falling in the above average range.

Male vs Female:

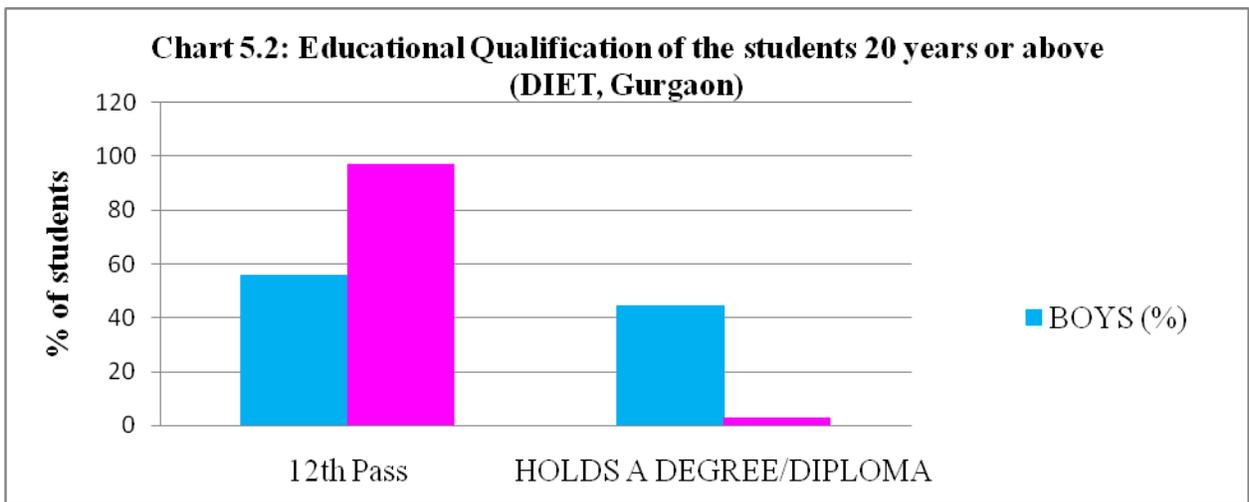
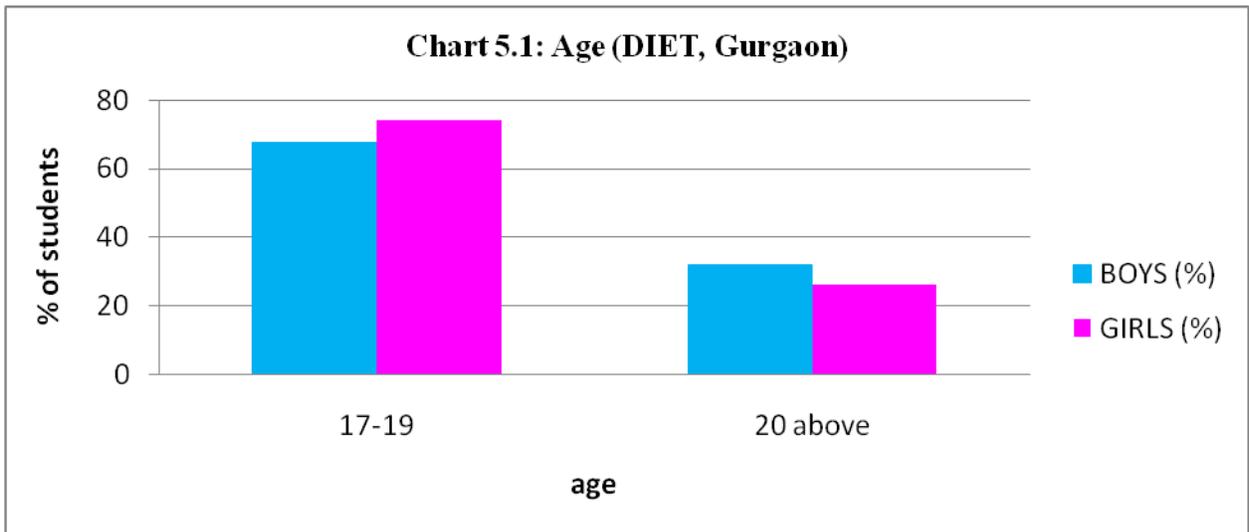
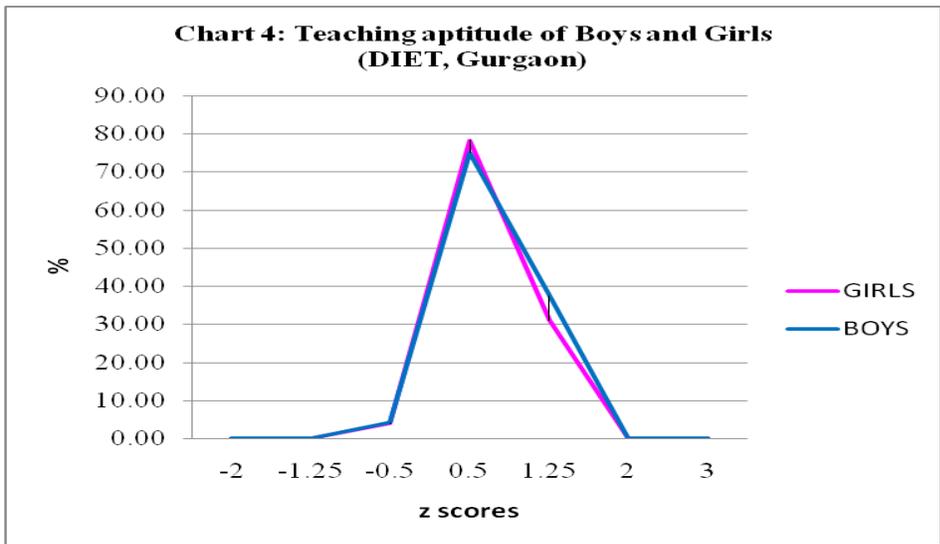
Group	Observations	Average Teaching Aptitude	Standard Deviation
Male	28	82.07	8.32
Female	146	82.03	6.75

Girls: Boys Ratio=1: 5

Statistically no significant difference was found between boys and girls in teaching aptitude. This can be a result of the small sample size for boys, especially as in comparison to girls, but the incredibly overlapping graph of male and female teaching aptitude doesn't seem to have happened by chance (Chart 4). There wasn't any significant gender difference in any of the sub components as well, except that there were statistically significantly more boys in the above average range on mental ability. 16.86% more girls were found in the below average range and 12% more boys were found in the above average range.

To find out the reason for the difference in the mental ability of boys and girls, age and educational qualifications' distributions were analyzed. It was found that while almost equal percentage of boys and girls fell in the two age ranges: 17-19 years and 20 years and above, 50% of the 20 years and above boys held a degree or a diploma whereas *only one* girl did. (Refer Chart 5.1, 5.2) At first, this was attributed to be the cause for the difference in mental ability, but when previous qualification and mental ability, as well as age and mental ability were correlated no significant correlation was found.

Nonetheless, it is an interesting trend!



Study Profile: GETTI, Mewat

Mewat is a district of Haryana state in India, carved from Gurgaon recently in 2005. It is predominantly rural with a few small towns. The average literacy rate of Mewat in 2011 was 56.10 % compared to 43.50 % of 2001, and male and female literacy rates were 73 % and 37.60 % respectively. The sex ratio for Mewat district is 906 females per 1000 males. 73.7% children (Std III-V) can read level 1 text and 60.5% children (Std III-V) can do subtraction in the schools of Mewat. (ASER Report, 2011)

The Government Elementary Teacher Training Institute (GETTI) is located in Ferozpur Namak, Mewat, 3 kilometers before the district Headquarter, Nuh. GETTI, Mewat has not been upgraded into a District Institute of Education and Training, although functionally in terms of pre service training it is the same as any other DIET.

The Institution has a strength of 500, which is maximum in comparison to the other Government Institutes of Teacher Training in the districts of Haryana. Of the 500, 246 students study in I year and 233 in the II year, with 60-80 in each section. There are 50 seats reserved by the Mewat Development Agency that takes in 25 Muslim girls, and 25 boys. Overall, girls are slightly higher in number. About 10% of them are married. There is no hostel facility, thus students have to commute from far off places. An NGO, in association with the SCERT has started teaching the incoming batch. There are 8 NGO's lecturers who teach I year students, 11 II years' lecturers and 11 seats are vacant. Most teacher educators have done post graduation plus B Ed. A new principal has been appointed two months back, who has taken steps to bring reforms: Earlier, students were in a habit of bunking; now attendance is taken seriously by students and teachers alike. Students are not satisfied with the quality of teaching in the institute. (Refer: Appendix B: Field Notes (GETTI, Mewat))

Methodology:

Teaching Aptitude Test Battery by Singh and Sharma (2011) was administered on a random sample of 101 Students pursuing Diploma in Education as well as Diploma in Education (Urdu); 42 males and 59 females; 62 I years and 33 II years.

Students resorted to cheating as soon as the test booklets were distributed, thus 20 the booklets were collected back and discarded. Efforts were made to standardize the testing conditions so that the objectivity of the research can be maintained, the booklets were redistributed.

Data Analysis

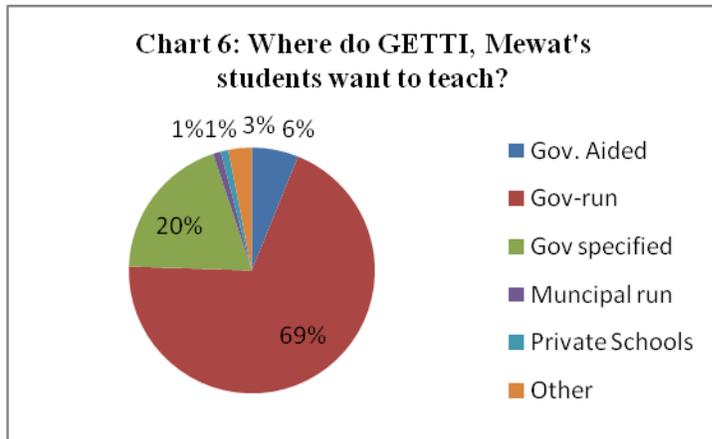
Sample Characteristics:

On a profile sheet, board percentages, age, year, previous qualification, reasons for choosing the teaching profession, district in which students live, district in which they'll teach and choice of school were recorded for each student.

Of the 101 students, 42 were males and 59 females; 62 were I years and 33 II years. 23% held a previous degree/diploma like B COM and BA, whereas 77% were only 12th pass-outs. Half of the students belonged to Mewat, 37% come from Palwal, where there is no GETTI or DIET⁸ and the rest from other districts of Haryana like Gurgaon, Rewari. All of them plan to teach in the districts they belong to, and not Mewat. In this sense, the sample is representative of the future teachers mainly of Mewat and Palwal.

The average board percentage was 77.67%, and the cut offs for the institution are around 80-85% for the general category. The average age of the students is 19.77, with 45% of the students falling in the 20 years and above category.

⁸ District Institute of Education and Training



Profile sheet revealed that 95.2% of the students would like to teach in government schools, out of which 70% in government run schools, 19% in government specified schools (KVS, NVC)⁹, 6% in government aided and 1% in municipal run schools. Only one student wants to teach in Private School. On interviewing, it was found that almost all students were interested in teaching in government schools because of better

pay.

Majority of the students said to have a social motive to teach, as indicated by statements like 'development of the village/society/nation' and 'teaching is a noble cause'. While many of these responses would be genuine, there might be some amount of socially desirable responses. Considerable portion of students said to have chosen this profession out of interest and growing job opportunities in the profession. Some other reasons that the students gave were pressure from the parents, respect

associated with the profession, inability to get job in any other field and high salary.

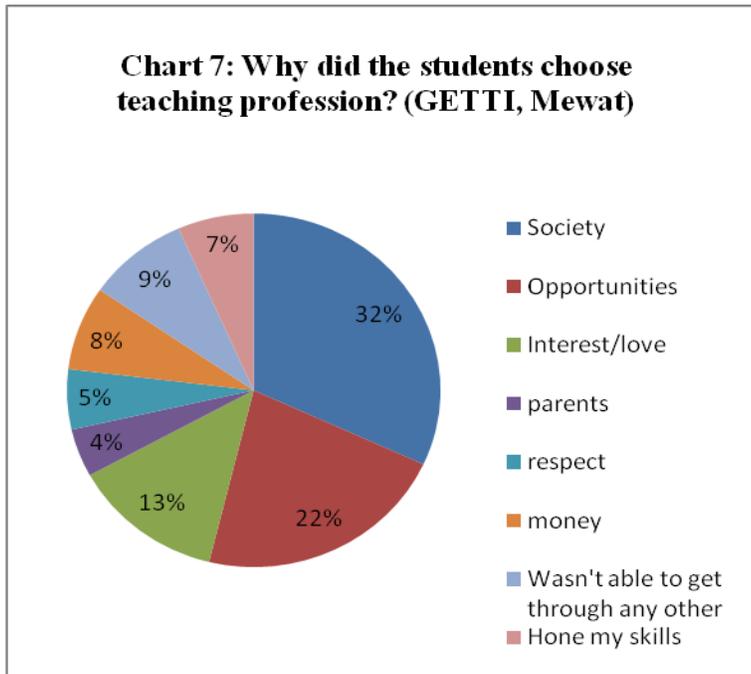
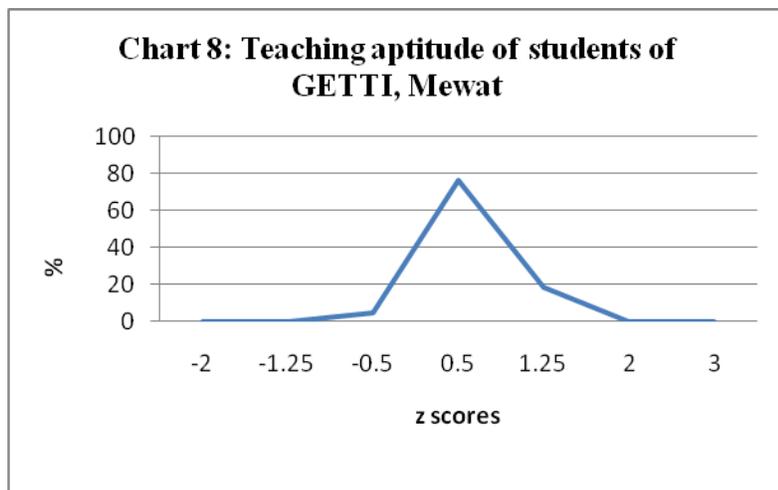


TABLE 5: SCORE SUMMARY (GETTI, MEWAT)

CATEGORY	MEAN	SD1	PERCENTAGE	SIGNIFICANCE	INTERPRETATION
MENTAL ABILITY	18.45	4.083	57.65	SIGNIFICANTLY BELOW	BELOW AVERAGE
ATTITUDE TOWARDS CHILDREN	13.89	1.75	69.45	SIGNIFICANTLY ABOVE	AVERAGE
ADAPTABILITY	16.22	2.78	57.92	SIGNIFICANTLY BELOW	BELOW AVERAGE
PROFESSIONAL INFORMATION	23.37	2.09	88.82	SIGNIFICANTLY ABOVE	ABOVE AVERAGE
INTEREST IN PROFESSION	8.03	1.73	66.91	SIGNIFICANTLY ABOVE	AVERAGE
TEACHING APTITUDE	81.47	7.04	67.89	SIGNIFICANTLY ABOVE	AVERAGE

The teaching aptitude of the pupil students falls in the average range. No statistically significant difference was found in the teaching aptitude of students of GETTI, Mewat and normative population.

To examine whether average teaching aptitudes were a result of teacher education at DIET, or schooling or both, the scores of first and second years were compared. Though comparing the 1 year students can't be called the controlled group, but comparing both will give us some form of direction.



No significant difference was found between the teaching aptitude scores of students of both years excluding professional information. In the above average range of Professional Information component, there were significantly more second year students.

The correlation between the

percentage in boards and the score on teaching aptitude test was found to be 0.3224. The coefficient of determination is 0.1039, which means that 10.39% of the variances of the two variables overlap. Thus indicating a positive and statistically significant but weak correlation between both the variables i.e. % in boards and teaching aptitude. This is in accordance with previous findings, mentioned in the section on review of literature on teaching aptitude, that the level of achievement in degree exam has no influence in predicting teaching aptitude.

Part scores:

Mental ability: Mental ability component comprised of items that test basic mental ability required to teach at the elementary level. There were three subsections: simple analogy, word problems and number series.

Component of Mental Ability	Average
Verbal Reasoning	7/10
Number Series	8/10
Word Problem	3/10

The mean mental ability score is 18.45 (out of 32), which is significantly below the mental ability of normative population. Mental ability of most of the students fell in the below average range. I and II years' mental ability scores were compared, t-testing procedures

revealed no significant difference. Thus, in most probability low mental ability is not only indicative of poor teacher education, but also the inability to develop mental ability of the students in schools.

Attitude towards children: Students rated 20 statements about children on a scale of 0 to 5, with higher numbers indicating appropriate attitude towards children. The average on this component was significantly above the normative population. In fact, only 5 students fell in the below average range. The scores are in coherence with the interviews, in which many student teachers, especially females expressed affection towards children and love for teaching kids in the interviews as well.

Adaptability: This section contained 28 multiple-choice questions, wherein the students had to complete the incomplete suggestions. Students' scores ranged from 7 to 27, with 54% of the students falling in the below average range and hardly anyone in the above average range.

Professional information: This section contained 28 incomplete statements. The students were required to complete each with any of the two sub-items. Students' scores were the highest on this component, relative to the normative population as well as to scores on other components. The mean percentage of scores was 88.82%, which is substantially high. The II year students scored better than the first year students, signifying that the II year students gained more professional knowledge during the course of one and a half years.

Interest in profession: This section consisted of 12 multiple choice questions. The students' interest was found to be significantly above the normative population, with most of the students falling in the above average range. This corroborated with the answers to the open-ended question: "Why did you choose teaching profession?" in which 50% of them expressed a social motive or genuine interest in teaching.

Male Vs. Female

Group	Observations	Teaching Aptitude Mean	S.D.
Female	59	77.65	6.53
Male	42	74.82	7.49

Girls: Boys Ratio= 7: 5

The teaching aptitude of female student teachers was found to be significantly higher than their male counterparts. These findings are in harmony with Adval (1952), Rajameenakshi (1988), Singh (1988) and Sajan (2010). Rajameenakshi (1988) showed that the female student teachers have superior teaching competency than males. Singh (1988) showed such difference in teaching efficiency. According to Donga (1987), females are more adjusted than males. In Sajan's study females scored significantly high on adaptability, professional information and professional interest. But in this study, the only component contributing significantly to teaching aptitude of female student teachers is professional information, while adaptability and interest are insignificantly different.

The above is contrary to the finding of DIET, Gurgaon. Thus, an overall estimation will give us a more conclusive picture. (Refer: Summary and Conclusion)

Though statistically insignificant difference was found in the mental ability of boys and girls, the mean for girls was higher by one point and there were slightly more girls in the above average range. As in Gurgaon, age and educational qualification of males and females were analysed. As a matter of fact, 16% more 20 and above girls held a previous degree/diploma than boys. At first this was thought to be the cause for better performance, but when mental ability were correlated with the two variables, age and previous qualification, no statistically significant correlation was found with either.

Group	Observations	Mean Mental Ability	S.D.
Female	59	18.98	3.90
Male	42	17.71	4.26

Palwal vs. Mewat:

There was no significant difference in the teaching aptitude or any of its components between the people who came from Palwal or Mewat.

Box 1: MEWAT VS. GURGAON

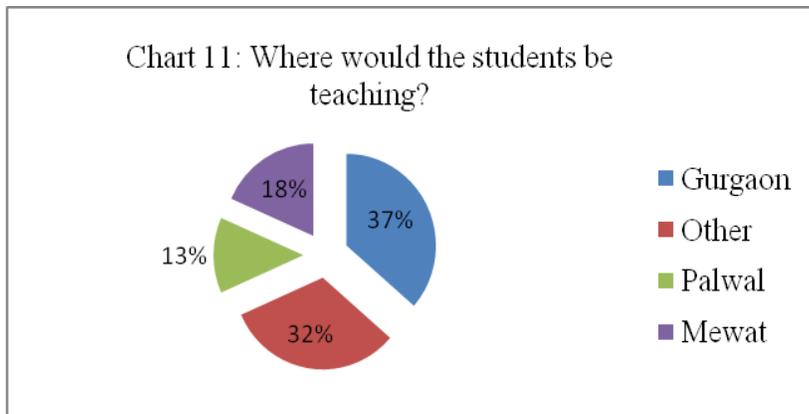
Category	Who scored more? (as per the training Institutes) (Statistical Significance)	Who scored more? As per 'future teachers of Mewat Vs. future teachers of Gurgaon' (Statistical Significance)
Mental Ability	GETTI, Mewat	Insignificant difference
Attitude towards Children	DIET, Gurgaon	Gurgaon
Adaptability	Insignificant difference	Insignificant difference
Professional Information	DIET, Gurgaon	Gurgaon
Interest in Profession	Insignificant difference	Insignificant difference
Teaching Aptitude	Insignificant difference	Insignificant difference

Table: Mewat Vs. Gurgaon

Though GETTI hasn't yet been upgraded into a DIET, and Gurgaon is far more developed than Mewat, the mental ability of GETTI, Mewat turned out to be significantly more! Initially it was thought to be due to the higher age group, and higher previous qualification of GETTI's students. But after correlating age and previous qualification with mental ability, no significant difference was found.

Summary and Conclusion

The samples were found to be representative of students who belong to and plan to teach in 12 districts, other than Mewat and Gurgaon. Thus, the results may be externally valid to some extent, though not possess absolute generalizing power.



Given that the test has been developed and used only in India, it is difficult to know where do future teachers of Haryana stand relative to the International standards, necessitating for us to carefully interpret the results.

The students of GETTI, Mewat as well as DIET, Gurgaon have an average level of teaching aptitude, but below average level of mental ability and adaptability.¹⁰

The students of GETTI, Mewat and DIET, Gurgaon have been found to have an average level of teaching aptitude, the mean being significantly higher than the normative population. The moderate level of aptitude directs us to guard against the tendency to attribute the low learning outcomes in government schools only to teachers' characteristics¹¹. Though this attribution is meaningful to certain extent,

¹⁰ In relation to norms provided in the Teaching Aptitude Test Battery's Manual by Singh and Sharma, '98

¹¹ The fundamental attribution error describes the tendency to over-value dispositional or personality-based explanations for behavior while under-valuing situational explanations. The fundamental attribution error is most visible when people explain the behavior of others

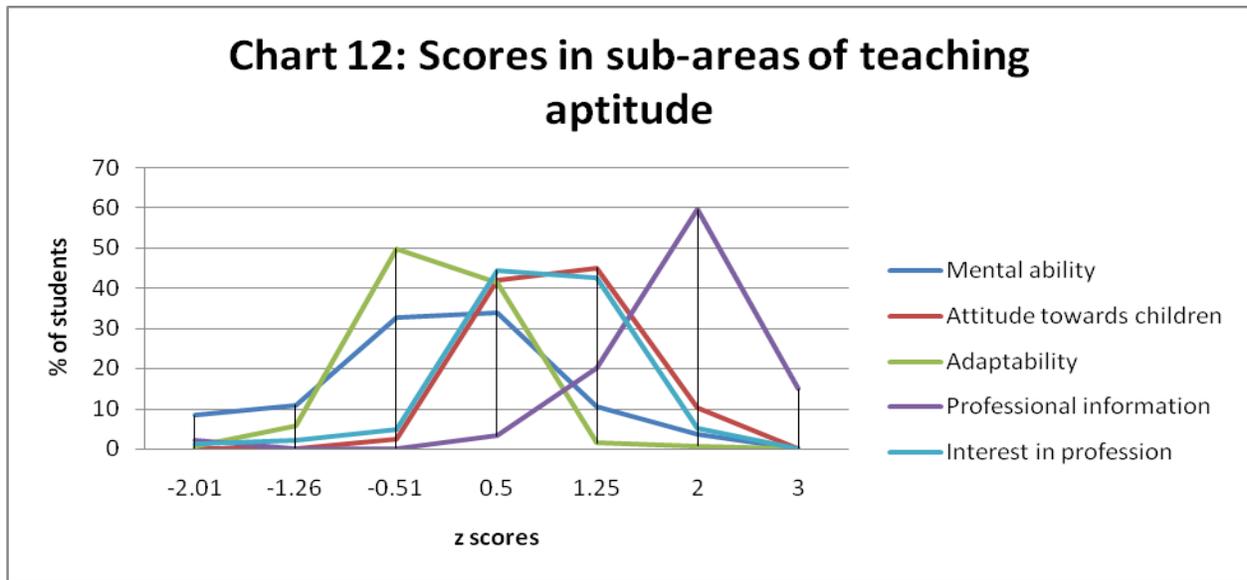
understanding the precise external factors is also crucial. The unaccountable environment, wherein there are no incentives to positively reinforce effective behavior, can be one of the influential factors on low learning outcomes. Goel (2007) found no significant difference in the teaching aptitude of government and private schools¹² teachers, but significant difference in their motivation level. Motivation level ¹³is in fact determined by incentives. Thus, performance based-pay to incentivize the government schools teachers can be the most efficient way to bring change in learning outcomes.

Though comparing the I year students can't be called the control group, but comparing both will give us some form of direction. In Mewat, I and II year student teachers' teaching aptitude didn't significantly differ, implying minimal role of the chronically understaffed GETTI in the development of aptitudes. On the other hand in DIET, Gurgaon, significantly more II year students fell in the above average on teaching aptitudes than the I year students, which is a positive indicator of the positive contribution of the DIET in developing aptitudes. This significance can surely be credited to the efficient and effective working of the DIET, as was observed on the field visit.¹⁴

¹² Private schools have found to have better learning outcomes than government schools. (Kingdon, 2005)

¹³ Incentive Approach (Theory of motivation in which behavior is explained as a response to the external stimulus and its rewarding properties)

¹⁴The II year student teachers were found to be more adaptable in DIET, Gurgaon, whereas were found to possess more professional information in GETTI, Mewat than I year student teachers. This maybe a reflection of the positive contribution of the respective teacher education institutes, though can't entirely be so.



Students fell in the below average range on mental ability. Despite interest in the profession, possession of professional information and correct attitude towards children, these students would be making a limited contribution due to low mental ability.

Talking about mental ability, I'd like to bring in focus a peculiar observation: few of the student teachers made spelling errors in English as well as Hindi while filling the profile sheet. Few spelt female as femail; few spelt bypass as bye pass! These are seemingly very specific observations, but these are important because not only will this one student teacher spell female as femail, but hundreds of kids of future generation might also spell female as femail! The future teachers would not only impact, but mold the lives of hundreds of kids.

Low mental ability of the students can be attributed to poor teacher education or poor schooling of these students or both. To find out which of these are true, I and II year students scores were compared. There was no statistically significant difference in the mental ability of the two. Thus it can be inferred that predominantly school education system failed to develop teaching aptitudes. Nevertheless, teacher education didn't substantially contribute in making the students mentally able.

The remedy for low mental ability can either be to extend the time duration of D. Ed.¹⁵ or raise the cutoff for admission or enhancing the entry qualification or to strengthen the school education. Raising the cutoff wouldn't be of much use, as the board percentages are based on achievement tests, wherein students can cram and reproduce, and not an aptitude or intelligence test. In fact, it was found in our study that achievement in boards is significantly but weakly correlated with mental ability. Though a positive correlation of 0.2966 turned out, it only points to a shaky linear relationship between the variables. National Curriculum Framework for Teacher Education '09 expresses a grave need to upgrade initial teacher education by enhancing the entry qualification. However, there hasn't been a significant correlation found between the previous educational qualifications or age and teaching aptitude or any of its component.. Extending the time duration of D.Ed. has also been emphasized in the Framework, but it would only mean extending the burden on the already inadequate and chronically understaffed District Institutes of Education and Training. Thus, the most logical remedy is to strengthen the elementary school education. At one level effective employment of technology should be explored in the elementary education to break the vicious cycle of poor mental ability of teachers to poor learning outcomes, at another level incentivizing seems to be the solution for teachers to impel continuous activity to learn and develop mental ability,

The students of both the target teacher training institutes lacked adaptability. The lack of adaptability is critical to continuous learning as a teacher. Teachers are transformational leaders in effect and leaders who are not adaptable run the risk of losing their ability to lead: inspire, influence or stimulate the students. Feezel, Jerry D. (1993) found out that creative teaching, which involves creating innovative lessons, games, materials and assignments to challenge students, can be stimulated in teacher education students by stirring up their thinking and encouraging them to explore different paths. Exploring new paths would certainly make the student teachers more adaptable and able to creatively teach kids in future. But for the aforementioned to happen, the hierarchy between the teacher educators and teachers, as well as between students and teachers need to break. Interestingly, a positive and significant correlation was found between age and adaptability.

¹⁵ Diploma in Education

On the other three components, the students' performance was moderate to moderately high. The students scored the maximum on the professional information component. The high scores can be because of only two choices of answers, implying higher probability of marking the correct option. In the study by Sajan (2010) and Beena (1995) also, students scored the most on this component. The moderate scores on interest are reflective of student attitude development, teaching attitude, job satisfaction and professional commitment. (Stedman, et al 1977; Breen 1979; Goyal 1980; Ruhland 2002; Suja 2007). Teacher's interest is one of the decisive factor influencing the whole teaching-learning process. (Beet 1973). The moderately high scores on attitude towards children are reflective of lesser probability of these teachers to be authoritarian, physically punish the students and to be sympathetic towards the needs of the children.

No statistically significant difference was found in the teaching aptitudes of male and female student teacher trainees.

When the two independent samples were combined, statistically no significant difference between the two was recorded, although the mean for girls was higher and their scores on two components, namely 'attitude towards children' and 'professional information', were statistically substantial.

The insignificant difference in teaching aptitudes is in agreement with our finding in DIET, Gurgaon, but in contrast to our finding in GETTI Mewat. Teaching aptitudes of female student teachers were found to be significantly higher than their male counterparts in GETTI, Mewat, and this was substantiated with past studies which show a considerable difference in male and female aptitudes. Nonetheless, the review of literature offers no conclusive results. There is enough literature that shows that no such difference in teaching aptitudes as well as teaching effectiveness of male and female teachers exist. (Vyas, 1982; Suvarnal, 1990; Ranganathan, 2008; Kant, 2011; Anwar et al.,2012) In fact recently, Kant (2012) studied teaching aptitudes of secondary school and found that the mean of male teachers was higher, although statistically insignificantly.

Though statistically no significant difference has been found in the combined sample, it would be un insightful to conclusively remark that so such difference in reality exists. The mean for females was indeed higher, and statistically scores on two of the components as well. We need future broad-based studies to reach a firm conclusion.

A positive and significant, but weak correlation exists between teaching aptitude and achievement in boards, and between mental ability scores and achievement in scores.

As academic achievement in boards and teaching aptitudes are weakly correlated, the admission on the basis of achievement test i.e. +2 board examination isn't justifiable. This is in agreement with Sajan's (2010) finding that coefficient of correlation between marks obtained at graduate level examination and the teaching aptitude is insignificant.

Admission to Diploma in Education in Haryana is made on the basis of the merit in board examination streamwise (Arts, Science, Commerce & Vocational). Although there is no doubt that performance at +2 level is a reflection of students' subject comprehension (Dushyant '07), it is not wholly reflective of teaching aptitudes. Teaching aptitude has positive correlation with almost all the success parameters, as we saw in the review of literature, thus efforts should be made to introduce an admission test, which comprehensively tests teaching aptitude, while giving some weightage to the +2 scores as well. Not only psychometric evaluation of aptitude should be incorporated, but a selection procedure wherein leadership, language and communication skills are also tested.

Future directions in research

Teaching aptitudes, while have been measured in many districts of Uttar Pradesh, Kerala, Jammu and Kashmir, Delhi, Karnataka and Haryana, there hasn't been a broad based study. Also, all these studies have been using instruments developed and used only in India. There is a need for a multi-state research, studying teaching aptitudes of teacher trainees relative to the international norms. A rich analysis can be drawn about the in-service teachers by not just employing the psychometric approach, but also combining it with structured interview schedules and tools to study the six components of 'Teaching as Leadership approach'¹⁶

There are very few specialized teaching aptitude test batteries available both in India and abroad. While development of such specialized teaching aptitude test is imperative, the current batteries also need to

¹⁶ Teaching as Leadership framework is categorized into six leadership principles: set big goals, invest students and their families, plan purposefully, execute effectively, continuously increase and work relentlessly.

be continually validated on the predictive criterion. The results of the current research can be used, to evaluate the Teaching Aptitude Test Battery by Singh and Sharma.

A comparative analysis of government and private schools will help us explore the 'making of teachers' in both sectors. Males and females' analysis on a large and representative sample will lead to conclusive results, providing substantial concrete knowledge for the society that has formed a 'female' mental imagery of a teacher.

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Appendix

Appendix	Title	Link
A	Field notes (Naturalistic observations at DIET, Gurgaon)	http://ccsinternship.files.wordpress.com/2012/06/appendix-a.doc
B	Field notes (Naturalistic observations at GETTI, Mewat)	http://ccsinternship.files.wordpress.com/2012/06/appendix-b.doc
C	Selection procedure of the test	http://ccsinternship.files.wordpress.com/2012/06/appendix-c1.doc