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RESEARCH PAPERS

Gifted with Disabilities: The Twice-Exceptional in India

Review and Reconstruction of M.Ed. Curriculum in Different Universities: A Study

The Causal Relationship between Mathematical Creativity, Mathematical Aptitude and Mathematical Problem-Solving Performance: A Cross-Lagged Panel Analysis

Critical Thinking and Academic Achievement among Secondary and Senior Secondary School Students

Perceptions of In-Charge Teachers of Mid-Day Meal Scheme in India: Case Study of UT Chandigarh

Academic Administration in Indian Universities: A Study of Occupational Efficacy, Managerial Aptitude and Organisational Commitment of Effective and Ineffective University Administrators

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एन सी ई आर टी
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EDITORIAL

This issue of *Indian Educational Review* contains six research papers/articles focussing on twice-exceptional children, M.Ed. curricula, mathematical creativity and aptitude, critical thinking, mid-day meal scheme, and academic administration. It also carries summary of three ERIC projects related to social science textbooks and teaching-learning processes, inclusive education, and teacher education curriculum in the North-East region.

The first paper 'Gifted with Disabilities: The Twice-Exceptional in India' by Anitha Kurup and Shalini Dixit provides a framework for identification and interventions of twice-exceptional children in India. In his paper 'Review and Reconstruction of M.Ed. Curriculum in Different Universities: A Study', S.K.Yadav has analyzed the M.Ed. curricula followed in Indian universities and offered suggestions for reconstruction of the curricula. In the third paper 'The Causal Relationship Between Mathematical Creativity, Mathematical Aptitude and Mathematical Problem-solving Performance: A Cross-lagged Panel Analysis', Tarun Tyagi has used a novel method of cross-lagged panel analysis to understand the relationship among mathematical creativity, mathematical aptitude and mathematical problem-solving. Roya Sherfat and C. G. Venkatesha Murthy, in their paper 'Critical Thinking and Academic Achievement among Secondary and Senior Secondary School Students', have tried to establish that critical thinking is an important contributor to achievement of the students at the school level. The fifth paper 'Perceptions of In-charge Teachers of Mid-Day Meal Scheme in India' by Seepana Prakasham evaluates the benefits of mid-day meal scheme as perceived by teachers in the city of Chandigarh. Firdous Ahmad Sofal, in the last paper titled 'Academic Administration in Indian Universities: A Study of Occupational Efficacy, Managerial Aptitude and Organisational Commitment of Effective and Ineffective University Administrators' have attempted to compare effective and ineffective university administrators on some psychological characteristics.

The issue carries summary of three research projects conducted under financial support by ERIC. These are: (1) Assessment of Social Science and Commerce Textbooks and Teaching Learning Processes by Saroj B. Yadav, Minoo Nandrajog, and M.V. Srinivasan; (2) A Study on Implementation of Inclusive Education at the Elementary Level on the Selected North Eastern States by Basansy Kharlukhi; and (3) Teacher Education Curriculum of North Eastern Region in the Light of NCFTE, 2009: An Analysis by Balaiada R. Dkhar.

The *Indian Educational Review* focuses on enriching the discipline of education by disseminating findings of educational research, providing opportunities for exchanging research experience among fellow researchers, motivating academicians and providing inputs to all those involved in policy making and planning. Contributions of academicians, researchers, and freelance writers are cordially invited for the next issue. We seek your suggestions and views on improvement of the journal and research initiatives.

Academic Editor

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The *Indian Educational Review* is a bi-annual journal, brought out by the National Council of Educational Research and Training (NCERT), New Delhi. The journal publishes articles and researches on educational policies and practices and values material that is useful to practitioners in the contemporary times. The journal also provides a forum for teachers to share their experiences and concerns about schooling processes, curriculum, textbooks, teaching-learning and assessment practices.

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Gifted with Disabilities The Twice-Exceptional in India

ANITHA KURUP* AND SHALINI DIXIT**

ABSTRACT

The 'twice-exceptional' is a segment of the population in whom extraordinary abilities coexist with disabilities. For a country like India with a large and diverse population of over 1.3 billion, which constitute about 10–15 per cent of the gifted population, the twice-exceptional children are estimated to be about 1.2 million in the age group of 3–18 years. The number of children in this specialised group is large; identifying them and providing them with appropriate services needs attention. The twice-exceptional child will need a unique environment that will simultaneously harness his/her gifts and also provide support to overcome the challenges whether they are learning difficulties, developmental disorders, or handicaps of a perceptual, physical, or psychological nature. In the absence of any initiative for the twice-exceptional children in India, the paper discusses the need for recognition of this invisible population. Drawing from the experiences of other countries, the paper provides a framework for identification and interventions that India can undertake to address the needs of our twice-exceptional children. The paper concludes with the possible policy directions in tracing this unique population in India.

Introduction

Most western countries including the United States, European countries, and Australia have conducted large-scale longitudinal research and have developed alongside programme interventions at the national level for their gifted children. More recently, Asian countries like China, Singapore, Malaysia and others have

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recognised the importance of identification and nurturing the gifted, and have undertaken programmes at the national level. India is one of the very few developing countries that has unfortunately *not* recognised the immense potential of a national programme for the gifted education.

A country of nearly 1.3 billion population, India houses the second largest population of the world, marked by its distinct diversity. Haub and Sharma (2006) referred to India as a “collection of many countries held together by a common destiny and successful democracy” (p.3). The total number of school-going children, including pre-school and Grades 11 and 12, is 406.9 million (Census of India, 2011). Assuming normal probability, the gifted children at a conservative estimate will be 3 per cent of the population amounting to a whopping 12.2 million. The ‘twice-exceptional’ or 2e children are a segment of the population where extraordinary abilities and talents coexist with disabilities. The incidence of learning disabilities in the gifted population is estimated to be about 10–15 per cent and the risk of learning disorders increases as a function of IQ (Silverman, 2003). The size of the twice-exceptional population who have learning disabilities—a subset of the gifted population in the age group of 3-18 years—at a conservative estimate of 10 per cent — numbers 1.2 million. In fact, the number will be much bigger if one were to include twice-exceptional with developmental disorders like blind and deaf, physically challenged and mentally challenged. However, this estimate is not available at the national level.

The number of children in this specialised group (2e) is large and their identification and appropriate education is further complicated by the geographical distribution and the diverse background of this special population. Further, India faces an immense uphill task to conceive and develop a robust education programme for the 2e, given the fact that the gifted education programme in India is yet to take off. In most countries, the 2e programme is embedded in the gifted education programme.

Large-scale longitudinal studies in the west over the last few decades indicate that there is a strong correlation of gifted children’s potentials with their environments (Gross, 1999; Makel and Williams, 2005; Pfeiffer and Petscher, 2008). The period between birth and 3 years has been recognised as significant for neuronal elaboration or ‘blooming’. Nash (1997) has pointed out that sensory experiences and associated learning in this period

has a direct impact on shaping and reshaping of neuronal circuits and on preserving their loss during the 'pruning' or synapse refinement stage of neural development (Nash, 1997). Though we cannot contest the genetic influence on the brain, the effects of the environment on brain development are equally crucial. The twice-exceptional child needs a unique environment that will simultaneously harness the gift and also provide support to overcome the challenge or handicap. It is thus imperative to provide greater sensory opportunities through cognitively enriched environments reflective of the imperative recognition of the specific disabilities of a 2e child. Among the list of recommendations made in the report by the Task Force of the American Psychological Association (Neisser *et al.*, 1996) is the provision of early enriched environments for a long-lasting effect on intelligence and academic achievement for children from early infancy through preschool.

It is in this context that India, which is yet to launch a national programme on gifted education, needs to consider the importance of including toddlers and pre-school children within its ambit. More importantly, the programme will have to additionally evolve specific mechanisms to identify and provide services for the twice-exceptional. Neglecting 2e children will not only result in a national loss of human resources, but will also create a deeper impact on families and individuals of this special population who are constantly challenged with limited information and a fragmented understanding of this unique situation.

The fact that 70 per cent of the Indian population is in its villages, and a vast majority of the population is also very poor; the absence of enriched environments to provide greater sensory opportunities and learning so vital to the development of the brain; coupled with the unique challenges faced by 2e children — provides a further impetus for early identification and provision of mentoring mechanisms. In an attempt to reach out to resource-poor families, particularly the 2e among them, the national programme of gifted education in India will have to recognise that the gifted population in India is not homogeneous; thereby increasing the challenge of providing differentiated enriched learning environments to the diverse population of the gifted. In spite of the challenge for India due to its multiple layers of differences that arise from the complex interactions of caste, religion, language, socio-economic status and the rural/urban divide, it may be prudent to focus on early identification of the gifted children including the twice-exceptional. Early identification will remove a second level of difference that

arises through lack of access to ability and need-appropriate education in India.

Apart from these differences caused by unequal access, the formal education system adds yet a third layer to unequal opportunity by introducing different schooling systems ranging from home-schooling to schools following a range of curricula including state-recognised Boards, Central Board of Secondary Education (CBSE), National Institute of Open Schooling (NIOS), Council for the Indian School Certificate Examination (CISCE), International General Certificate of Secondary Education (IGCSE), International Baccalaureate (IB) and the Montessori system among others. These different types of schools located in rural and urban areas reflect variations with regard to infrastructure, teacher quality, teaching/learning process, teacher-student ratio, and the school environment (Kurup and Maithreyi, 2012). The inequality already existing in Indian society is further amplified by the differences created in the formal education system. Today in India, it is only the elite who can access the IGCSE or IB curriculum that has individualised educational plan (IEP): a crucial curricular feature for nurturing the development of the gifted/twice-exceptional. The twice-exceptional as a group already faces difficulty in getting into mainstream formal education system due to prejudices and attitudes towards any child with disabilities. For a fraction of the 2e, who belong to the elite, parents of these children have worked together to find their way to an extremely small number of elite schools that have programmes to accommodate the 2e within the larger school system. Some of the schools in Bangalore are the Bangalore International School and Vidyashilp International Academy. There are isolated efforts by several NGOs who provide training and learning support to children with disabilities, but the 2e seems to be invisible within this population. This is, however, not true for a vast majority of twice-exceptional children in India, who are not even recognised for their gift, or whose gift may mask their disability and thus prevent appropriate remediation. For those who are recognised, and belong to poor households, the public school system is not at all equipped to respond to the needs of this population.

Twice-Exceptional—The Invisible Population

Twice-exceptional students are a unique group who demonstrate being gifted in one or more areas with the coexistence of some

form of developmental disorder, learning disorder, or physical, sensory-perceptual, or psychological disability. Often referred to as 2e, these children are otherwise called paradoxical learners (Tannenbaum, 1983; Tannenbaum and Baldwin, 1983), for to the fact that they demonstrate inefficiency in certain basic cognitive skills but at the same time exhibit high levels or superior levels of intellectual abilities in certain other spheres. More often than not, these children have been identified for their learning disabilities with little attention on the giftedness they possess.

The defining characteristic of a twice-exceptional learner is evidence of high performance or potential in a gift, talent or ability combined with a disability that suppresses the student's ability to achieve according to her/his potential (Brody & Mills, 1997). Thus, many 2e children are misidentified as average learners since their gifts help them compensate their specific learning disabilities and they pass as average though they are fundamentally underachievers (compared with their abilities). In situations where parents and teachers are unaware of the possibility of the coexistence of the gift with the disability, the children's occasional demonstration of gifts in certain areas and their underperformance in other areas leads one to believe that they are lazy or uninterested in specific areas.

Along with being exceptionally talented these students may have a learning disorder. These disorders can range from dyslexia (reading disability), dysgraphia (writing disability), dyscalculia (numerical disability), behavioural disorders (Attention Deficit/Hyperactivity Disorder (ADHD), conduct disorder; physical disability, hearing impaired, visually impaired, physical disability, autism spectrum disorder, and social or emotional difficulties. The twice-exceptional also show characteristics of giftedness. They demonstrate above age-level potential in one or more domains that places them in the top 3 per cent of their age group. However, in all likelihood the coexistence of one or more disabilities will result in the disability inhibiting the expression of the gift, or the gift preventing diagnosis of the disability, both problematic situations (Reis *et.al.*, 2014).

Reis, Baum and Burke (2014) reviewed deliberations by the National Joint Commission of Twice-exceptional Students (2009) and the three subsequent meetings convened at National Association for Gifted Children (NAGC) annual conference. Alongside they reviewed research and literature during the course of the article and outlined the following operational definition of 2e students.

Definition

Twice-exceptional learners are students who demonstrate the potential for high achievement or creative productivity in one or more domains such as math, science, technology, the social arts, the visual, spatial, or performing arts or other areas of human productivity and who manifest one or more disabilities as defined by federal or state eligibility criteria. These disabilities include specific learning disabilities; speech and language disorders; emotional/behavioural disorders; physical disabilities; Autism Spectrum Disorders (ASD); or other health impairments, such as Attention Deficit/Hyperactivity Disorder (ADHD). These disabilities and high abilities combine to produce a unique population of students who may fail to demonstrate either high academic performance or specific disabilities. Their gifts may mask their disabilities and their disabilities may mask their gifts.

Identification

Identification of twice-exceptional students requires comprehensive assessment in both the areas of giftedness and disabilities, as one does not preclude the other. Identification, when possible, should be conducted by professionals from both disciplines and when at all possible, by those with knowledge about twice-exceptionality in order to address the impact of co-incidence/co-morbidity of both areas on diagnostic assessments and eligibility requirements for services (Reis, Baum and Burke, 2014, pp. 222).

Services

Educational services must identify and serve both the high achievement potential and the academic and social-emotional deficits of this population of students. Twice-exceptional students require differentiated instruction, curricular and instructional accommodations and/or modifications, direct services, specialised instruction, acceleration options, and opportunities for talent development that incorporate the effects of their dual diagnosis.

Based on the above definition and other research in this area the following characteristics of the 2e students can be mapped (Table 1).

Table 1
Characteristics of Twice-Exceptional Children

| | |
|-----|--|
| 1. | Divergent thinking, novel approach to problem-solving, abstract reasoning and exceptional analytical skills (Ferri <i>et al.</i> , 1997; Rivera, Murdock & Sexton, 1995). |
| 2. | Extensive vocabularies (Deshler & Bulgren, 1997; Ferri <i>et.al.</i> 1997) |
| 3. | Good Memory (Ruban & Reis, 2005) |
| 4. | Good listening comprehension and able to express themselves well (Hishinuma & Tadaki, 1996) |
| 5. | Strong critical thinking and often enjoy interest or hobbies (Ruban & Reis, 2005; Reis <i>et al.</i> 2014) |
| 6. | Desire for knowledge, desire to explore and discover (Ruban & Reis, 2005) |
| 7. | High level of creativity and keen interest in hobbies outside school setting (Baum, 1988; Reis <i>et al.</i> 2014) |
| 8. | Specific aptitude (aesthetic, literary or mechanical) and task commitment to areas of interest (Ruban & Reis 2005). |
| 9. | Wide areas of interest (Ruban & Reis, 2005) |
| 10. | Good sense of humour (Ruban & Reis, 2005) |
| 11. | Perfectionism, unrealistic self-expectations (Ruban & Reis, 2005) |
| 12. | Highly sensitive to criticism, to feelings of others (Ruban & Reis, 2005) |
| 13. | Often bored with grade-level activities, repetitive, rote learning, and frustrated with lack of input and stimulation in the areas of their excellence (Dix & Schafer, 1996) |
| 14. | Feelings of frustration, unhappiness and isolation (Baum & Owen, 1988; Norton, 1996; Silverman, 1989) |
| 15. | Hyperactive, inattentive, impulsive, aggressive, defensive, withdrawal (Mendaglio, 1990; Dix & Schafer, 1996; Van Tassel-Baska, 1991; Reis <i>et al.</i> 2014) |
| 16. | Poor listening and concentration skills(Reis <i>et.al.</i> 2014) |
| 17. | Lack of organisational skills, Failure to complete tasks/assignments (Ruban & Reis, 2005, Reis <i>et.al.</i> 2014) |
| 18. | Disruptive classroom behaviour, lack of motivation and learned helplessness (Reis & Colbert, 2004) |
| 19. | Low self-esteem, low self-concept (Van Tassel-Baska, 1991; Ruban & Reis, 2005; Whitmore, 1980) |
| 20. | Absence of social skills (Ruban & Reis, 2005; Waldron, Saphire & Rosenblum, 1987; Reis <i>et. al.</i> 2014) |

The above list though not extensive is comprehensive enough to attempt the recognition of traits of the twice-exceptional in the

Indian context. Developing a trait table based on real examples of the twice-exceptional in India can be one of the first steps in reaching out to this elusive population. Parents, teachers and community members can be active participants in this exercise of identifying the 2e children in India.

Spectrum and Scope of Disabilities

The 2e as a population face several challenges in the nature and types of specific exceptionalities that coexist with giftedness. As discussed above, students can have one or more forms of disabilities combined with giftedness. Different forms of disabilities combined with giftedness presents with it unique set of issues and challenges. There is an underlying need to understand the nature of disabilities that could range from different types of learning disabilities; to physical and mental disabilities; and socio-emotional problems. The processes of identification and intervention for children who belong to the above categories have to take into cognisance these specific disabilities along with the gift. As well, in the case of some 2e categories such as gifted with ADHD and gifted with autism-spectrum disorders, identification is further complicated by the fact that the traits of giftedness alone overlap with the traits of one of these disorders. Thus, an attempt is made to briefly outline the nature of the specific dual exceptionalities in this section as outlined by Reis and McCoach (2002).

The dual exceptionalities can be broadly classified as:

1. Twice-exceptional with Learning Disabilities
 - Type I—Mild Learning Disability
 - Type II—Severe Learning Disability
 - Type III—Masked Abilities and Disabilities
2. Gifted Students with Hearing and Visual Impairment
3. Gifted Students with Cerebral Palsy
4. Gifted Students with ADHD
5. Gifted Students with Autism Spectrum Disorder (ASD)
6. Gifted Students with Psychological and Behavioural Problems

Twice-Exceptional with Learning Disability (LD)

Learning disability refers to any disability related to acquisition, organisation and retention of verbal and/or nonverbal information. As the name suggests, an LD negatively affects the learning process of a student. In case of a gifted child with an LD, the LD may go unnoticed. A gifted student's academic performance may not

be as low as other LD students. On the other hand, the talents and giftedness of some children might not get recognised because of their disability. Based on such situations researchers have identified three types of Gifted Learning Disabled (GLD) (Baum, 1990, as cited in Krochak & Ryan, 2007).

Type I: Mild Learning Disability: These students may not be noticeable because they manage to do well in academics. They may be identified as demonstrating laziness, clumsy, sloppy and less motivated.

Type II: Severe Learning Disability: Students are mostly diagnosed as LD but rarely as gifted. Their disability masks their giftedness, leading to severe consequences on their performance.

Type III: Masked Abilities and Disabilities: Students may not be identified as either gifted LD. The characteristics like frustration, learned helplessness, lack of motivation, lack of organisational skills, low self-esteem, low social skills of LD children mask their giftedness. On the other hand, they have certain positive traits such as advanced vocabulary, high levels of creativity, advanced problem-solving skills, good memory, task commitment, etc. However, the fact remains that because of this masking of abilities, identification of both the LD and the giftedness is impeded (Ruban & Reis, 2005).

Gifted Students with Hearing and Visual Impairment

Children with hearing and visual impairments have similar characteristics. Children can show lag in academic achievement of up to five years (Reis & McCoach, 2012). Students with either hearing or visual disability show an accelerated ability on the other intact modality. If a student is visually-impaired and is gifted she/he may show advanced hearing skills and concentration. On the other hand, a hearing-impaired child may show sharp visual abilities and visual attention (Willard-holt, 1999).

Gifted Students with Cerebral Palsy

Cerebral palsy is a neurological condition which affects the body movements, body and muscular coordination along with gross and fine motor skills. Willard-Holt (1994, as cited in Reis & McCoach, 2012) reported such students to have advanced mathematical and verbal skills; they are quick at learning and recall, have a good sense of humour, and are curious and persistent. Thus, they use cognitive skills to manage their disability.

Gifted Students with Attention Deficit Hyperactivity Disorder (ADHD)

Children with ADHD are characterised by attention problems, and/or hyperactivity and impulsivity. For a child to be classified as ADHD these symptoms should be manifested in more than one setting, for example, school *and* play (DSM-IV American Psychiatric Association, 2000). The characteristics of gifted students, often, resemble the ADHD-2e student. The latter may show inattentiveness, boredom and hyperactivity. However, as compared to other ADHD children, ADHD-2e children show sustained attention on tasks of their choice and interest. In order for an ADHD child to be categorised as gifted, his/her behaviour should be monitored closely, at both home and school.

Gifted Students with Autism Spectrum Disorder (ASD)

According to DSM-IV autism is characterised by difficulty in language, imagination, and social situations; symptoms include lack of shared gaze and rigid and specific behaviour patterns and interests. The traits of autism sometimes overlap with those of non-2e gifted children, i.e., difficulty in making friends because of advanced or asynchronous development, and sustained attention on topic of interest. Because of this camouflaging, it is imperative that the expert who diagnoses or monitors the students should be familiar with both the conditions separately: ASD and giftedness.

Gifted Students with Psychological and Behavioural Problems

Just like any other student, gifted students may also suffer acute psychological conditions, owing to underachievement, lack of suitable peers, boredom, and frustration. It is important for teachers and student counsellors to remain aware of distress among students and attend to any alarming situation (Reis & McCoach, 2002). These students can experience mixed feelings about their ability and disability leading to confusion, anger, frustration, and isolation. These mild or severe psychological conditions may give rise to inconsistent achievement and behaviour patterns, hostility, withdrawal, and impulsive behaviour (McEachern & Bornot, 2001).

Status of Identifying Twice-Exceptional Students in India

The twice-exceptional in India are more likely to be identified for their disability rather than their gift. The underlying cause is that

India continues to delay implementing a national gifted education programme. As is the case worldwide, the advocacy for the disability with a focus on physical disability has had a longer history. The efforts to advocate for the individuals with physical disabilities began over three decades ago and have made considerable headway both internationally and at the national level. Mental disability and learning disability are new entrants into the discourses on disability and have gained limited success in gaining visibility in the Indian context. It is in this newly defined space, that perhaps the twice-exceptional will be recognised with a focus on providing service for their disability. In the near absence of the recognition of *gifted* children in India, it has been observed at the institutional level that the term 'gifted' and disability are considered to be mutually exclusive.

Despite the above challenges, the last two decades have seen a consolidation of the traits of twice-exceptional based on clinical data, individual case profiles, and attempts to carry out systematic research to understand their characteristics and traits better (David & Rimm, 2002). Drawing from a wide range of literature (i.e. McEachern and Bornot, 2001; Ruban & Reis 2005, Reis *et al.* 2014) from the field of twice-exceptional, an attempt is made to summarise the traits to provide a starting-point to identify this group in the Indian context.

Identification of Twice-Exceptional Students

The 2e started to be recognised in the 1970s; however the correct approach to identifying 2e students still remains debated (Grimm, 1998; Krochak & Ryan, 2007; Rizza & Morrison, 2007; Ruban & Reis, 2005). The most common obstacle in identifying the twice-exceptional children is the fact that academic performance is the most frequently assumed indicator of giftedness. Students who are gifted but have some disability seldom perform as well as the gifted children do. Consequently, they are seldom included in gifted education programmes. Coleman and Gallagher (1995, as cited in Rizza & Morrison, 2007) observed that most US states have an identification process and education programme in place for the twice-exceptional; however, there is still under representation of these students in the pool of gifted students.

Right from the initial recognition of this group by Maker (1977, as cited in Ruban & Reis, 2005) their existence remains undeniable. However, for all the reasons discussed above, it

remains challenging to identify them (Krochak & Ryan, 2007; Reis & Ruban, 2005, Reis & McCoach, 2002; Rizza and Morrison, 2007). These researchers also acknowledge that it would be misleading to use IQ scores or ability-testing alone to identify the 2e. Even widely-employed IQ tests such as the Wechsler tests have limitations. There is no normative data to indicate the performance of twice-exceptional students. There has now, however, been modification in the norms of, for example, the WISC-IV (2003). Data from disabled and gifted students had been included in the new norms, but there was no inclusion of twice-exceptional students. Similarly, for other tests of general ability, there is no literature on how a particular ability influences the gifted trait of a student. Therefore, in the absence of a comprehensive framework, the use of standardised tests poses a serious challenge. In an attempt to identify the twice-exceptional. Krochak and Ryan (2007) suggested the use of a multi-faceted approach. They suggested use of a combination of measures including: behavioural checklist of both positive and negative behaviour; informal assessment inventories; use of portfolios; and creativity tests — in addition to IQ tests. In other words, identification of the 2e children will have to adopt multiple data points to be able to arrive at a conclusion. A similar but more structured approach has been recommended by McCoach *et al.* (2004, as cited in Ruban & Reis, 2005) as an eight-step system. This system uses various measures such as intelligence testing, behavioural observations, cognitive processes, achievement test, functioning in classroom, curriculum-based assessment, and interview etc. to devise and implement educational plan for twice-exceptional children.

In another review Grimm (2010) suggested a very simple process for identifying twice-exceptional students: use the subtests of any intelligence test to see if there is a high score on more than three subtests. This student can then be shortlisted and information from teachers, family and peers can be gathered about her/him. This should be followed by observation of the child in different settings. The observed 2e children can be compared with the children of same disability to ensure if she/he exhibits advanced abilities.

Interventions for Twice-Exceptional Students

Reviewing various intervention models for twice-exceptional children, Reis and McCoach (2002) remarked that efforts have remained inconsistent and ineffective. They have used reversal of

underachievement as criteria for the success of the intervention programmes. They remarked that the diverse populations, and likelihood of students own motivational level influencing the results, make it difficult to be conclusive about the efficacy of these intervention programmes.

Rizza and Morrison (2007) devised a toolkit to identify and work with twice-exceptional children. There are following four stages suggested by them: *Pre-referral and Screening*; at this stage students who either primarily show giftedness and their disability is masked, or they show disability and their giftedness is masked, or they show a balanced outlook and their disability is compensated by their giftedness, and are attended to. This can be achieved by seeking out instances of difficulty at some level in gifted students and instances of exceptional performance amongst disable students. The role of class teacher becomes crucial at this time. Next stage is *Preliminary Intervention*. The shortlisted students may be analysed about their strengths and weaknesses, so that an individualised educational plan may be developed for them. The resultant intervention plan should be implemented at this stage with the help of school, counsellor and teacher. *Evaluation Procedures* are done next to determine the effectiveness of the devised educational plans. Rizza and Morrison suggest that the evaluation should be liberal and *Multi factor evaluation should be done* so that any relevant information about the students learning style and strength should not be missed out. Based on these evaluations the final stage is that of *Educational Planning*. The plan should address both, strengths and weaknesses of the students through Individual Education Plan.

Initiatives for the Twice-Exceptional in India: Identification and Intervention

In India the process of identification of the twice-exceptional poses a serious challenge. Given the fact that the country is still contemplating the need for a separate National Programme on Gifted Education, the programme for the twice-exceptional is going to take time. The ray of hope is that the first steps are already taken. India has recognised the need to explore the development of parameters and tools to identify the gifted children from 2010 on a pilot basis. The tools are in the process of being standardised. Thus, one can hope that the twice-exceptional will find their way through this national intervention and receive their due. It can be

argued along the same lines, given the large numbers (1.2 million in 3–18 years) one is dealing with, it will be essential to develop several identification tools and different levels to address the problem of scale, diversity, language, caste and class that define the very fabric of the Indian population.

The near absence of any initiatives for the twice-exceptional children in India calls for a multi-pronged approach to address the needs of this special population. This would require: (i) creating a space for the twice-exceptional within the learning disabilities group, and (ii) advocating for the gifted education programme and creating a space within it. India will have the challenge of developing a comprehensive platform to provide services for the twice-exceptional. The multitude of languages, caste, class, religion and the rising rural urban differences defining inequality in a diverse country like India might create huge roadblocks for the programme.

However, to begin with, it will be critical to identify and create a database of the twice-exceptional children in India through an intensive field exercise reaching out to the existing clinics, informal service centres and parents of the twice-exceptional. School counsellors, can play a critical role in the first level of identification of the twice-exceptional children in the formal educational system. She/he can act as a mediator between school and parents, can devise academic strategies with teachers and can do individual and group counselling with students who face this dual paradox of twice-exceptional. With the kind of psychological behavioural challenges these students face, the school counsellor can be a facilitator and mediator for students, teachers and parents. Researchers have observed that role of a school counsellor is crucial in communicating to the psychologist, teachers and parents, about the vulnerabilities and challenges of a twice-exceptional child (Assouline, Nicpon & Huber, 2006; McEachern & Bornot, 2001). In the absence of any services for the twice-exceptional, this can be an important first step. The country can launch a nationwide awareness programme about the twice-exceptional targeting teachers and counsellors across schools in India. Leverage of technology and media will be critical to provide the required momentum for this uphill task.

The disability group in India has a long history. Over the years, this group has been able to build momentum and create mechanisms within the formal school system to integrate children

with disability. The forms of disability has been physical during the initial phase of the struggle but has gradually expanded to include children with learning disabilities. This shift has taken place during the past decade and has resulted in several measures taken by the government to provide special provisions to children with learning disabilities too. It is against this background that we argue for the inclusion of the twice-exceptional who along with disabilities that can be physical, mental or learning disabilities also have gifts in specific areas. The argument that the twice-exceptional which is a subset of the disability group has not received enough attention and harnessing their gift while addressing their disability will go a long way to enhance the national resource and build back confidence and pride within this sub group. It may not be a surprise if this new shift will bring to the centre the need for the gifted education programme in India.

Alternatively, it may be useful to introduce the twice-exceptional into the much awaited gifted education programme in India. As early as 1986, the Indian government sought to improve the overall quality of education, particularly for rural Indian and other minority populations, by introducing the *Navodaya Vidyalaya* Scheme to promote rural and minority talent (Wright, 2008). In addition, annual national-level tests such as the National Talent Search Scheme, Olympiads in mathematics and science, the *Kishor Vigyanik Protsahan Yojna* scholarship, INSPIRE programme and other local talent search programmes have been introduced. By and large these tests measure acquired knowledge and skills and are used as a single point screening test conducted at the national level. As pointed out by Renzulli (2005), the Achilles heel of gifted education has been the inability to adequately include children who do not fall into nice neat stereotype(s) of good test takers and lesson learners-ethnic minorities, under achievers and children who live in poverty and young people who show their potential in non-traditional ways. Further, as Naglieri and Ford (2005) have pointed out, children may be intellectually gifted, yet do not demonstrate high academic achievement and hence may be left out on these tests.

Most of these programmes have been developed with a limited understanding of how giftedness unfolds among the varying populations that constitute India. The programmes are unaware that gifted population constitutes a critical proportion of the twice-exceptional. Similar attempts to identify the gifted children

have been made by a few Non-Governmental Organisations (NGOs) in some parts of the country. The *Jyana Probhodini* School for the gifted and talented in Pune and the Jagadish Bose National Science Talent Search (JBNSTS) programme in Kolkata are a few examples. These programmes have been local specific and have been operational for several decades. These programmes have been successful in a limited scale.

Despite the late start, India is still in a position to turn this to its advantage. By drawing on global developments in new fields such as cognition, neuroscience, neuro-imaging, neuropsychology, and brain studies, India can envision a comprehensive and robust national programme of gifted education by creating a national centre of gifted education. This centre can be steered by a core group of researchers, practitioners, parents, and policy and advocacy experts representing the different regions/stakeholders in the country (Kurup & Maithreyi, 2012). India can also harness the literature that points to the growing presence of the twice-exceptional—a new segment of population that is gifted with disabilities.

Twice-Exceptional in India — The Road Ahead

A well-thought-out programme for the twice-exceptional at the national level can benefit children across all sections of society. In fact, the programme will be more useful for children who come from poor, rural and tribal households who do not have the necessary resources to support these children. The resources needed for a programme for twice-exceptional children can be optimised if conceived at the national level, which can organise for resource sharing through nodal centres established at district and state levels and facilitating for an individualised education plan based curriculum for these children. Training of teachers to address the need for this population is integral to the success of the programme.

To begin, the government can run the programme on a pilot basis. Simultaneously, one can explore the Corporate Social Responsibility (CSR) funding to support the twice-exceptional from poor socio-economic backgrounds. This can be made possible if we can create a platform to advocate for the rights of these children. Parents of the twice-exceptional children who are de-facto playing the role of facilitators can be drawn for additional support. Therefore, it is imperative that the country should take up the responsibility of catering to twice-exceptional children because considerable numbers of these children may be coming from

resource-poor homes. The same centre can provide services to the gifted and thus a cost-effective local centre to address the learning needs of children across the learning continuum is created in every district. Local resource persons can be drawn to compliment the working of this centre.

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Review and Reconstruction of M.Ed. Curriculum in different Universities A Study

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ABSTRACT

The quality of teachers depends upon the quality of teacher-educators who are the product of the Master in Education (M.Ed.) programme of teacher education. The quality of teacher-educators depends on M.Ed. curriculum and its transaction. In this regard, the policy documents have also made several recommendations from time to time for improving the quality of curriculum, content and course structure of Master in Education (M.Ed.) programme. National Curriculum Framework for Teacher Education (NCFTE)–2009 suggested innovative curriculum and course of M.Ed. programme for its quality improvement. The present study examined the status of M.Ed. (General) and M.Ed. (Special Education) curricula run in twenty-eight Central and State Universities in terms of course structure, accrediting agencies, working days, practicum, research component, examination and evaluation, weightage assigned to core and optional theory papers etc. The extent to which the curricula of M.Ed. programme run in these universities are in consonance with NCFTE, 2009 and as per revised norms and standards of National Council of Teacher Education (NCTE) Regulations–2014 have been discussed in this paper.

Introduction

The quality of school education depends upon the quality of teachers who are prepared through Master in Education (M.Ed.) programme of teacher education in the country. At present, M.Ed. programme is being run in 230 Universities and 1011 teacher education institutions including 124 government and 887 private

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institutions with total intake of 45075 students (NCTE, 2016). In the past, efforts were made to improve the quality of M.Ed. programme by setting up several Commissions and Committees by the Government of India. The *University Education Commission* (1948–49) stated that the teacher-educators must look at the whole course from a different angle; unintelligent following of rule-of-thumb methods should be discarded; not less than 50 per cent of the staff should have school teaching experience, and the theory courses must be flexible and adaptable to local circumstances. The *Secondary Education Commission* (1952–53) suggested for adopting new techniques of evaluation and voiced that more capable and intelligent persons should be attracted to the teaching profession. It further recommended minimum three years teaching experience after graduation in education for admission to M.Ed. programme. The *Review Committee on Education* (1960) of UGC recommended that the content of the M.Ed. course should lead to at least one specialisation and to a fair acquaintance with the methodology of educational research, besides promoting a desirable intellectual discipline. For admission to M.Ed. course, the candidate should generally have a good second class B.A./B.Sc. degree, preferably a good second class M.A./M.Sc. degree and a first or second class B.Ed. degree in both theory and practice. Teaching at the M.Ed. level should be supplemented by tutorial seminars. Dissertation as a part of the M.Ed. programme serves a useful purpose but at present it usually does not come up to a desirable standard. The Study Group on the Training of Elementary Teachers in India (1961) stated that it is desirable that universities provide specialised courses at the M.Ed. level to prepare teacher-educators for training institutions. It would also be a distinct advantage if persons taking such specialised courses become familiar with methods of infant teaching. The *Education Commission* (1966) recommended that quality of training institutions and of teacher education programmes should be improved.

In the light of recommendations made by different Commissions and Committees, the Government of India set up regulatory bodies like National Council for Teacher Education (NCTE), University Grants Commission (UGC) and Rehabilitation Council of India to develop curriculum of M.Ed. programme. In 1998, the NCTE brought out *Curriculum Framework for Quality Teacher Education* which provided guidelines for the organisation of curriculum for different stages of teacher education including M.Ed. programme and also suggested two years duration for M.Ed. programme. NCFTE (2009) suggested improving the design and imparting

greater rigour and professionalism to the M.Ed. programme and also recommended stage-specific specialisations for meeting the needs of different levels of schooling. Suggestions have been made for post-graduate courses in teacher education of two years with provision for specialised areas in the development of scholarship in education and applied fields, such as teacher education, curriculum planning, evaluation, counselling, sociology and philosophy of education.

The UGC also developed the Curriculum Framework and syllabus for M.Ed. programme during 1990 and 2001. The M.Ed. (special education) curriculum followed the guidelines of Rehabilitation Council of India (RCI). During 2012, Justice Verma Commission (JVC) recommended that current M.Ed. programmes need specialisation at different levels of school education and the duration of M.Ed. course should be of two years. The recommendations of JVC were accepted by Government of India and NCTE revised the norms and standards of all the teacher education programmes including M.Ed. programme in 2014.

Though policy perspectives emphasised from time to time for improving the quality of M.Ed. programme, but it is known to be of generic in nature (Khameri & Mahapatra, 2013; Srivastava & Singh, 1976; Yadav, 2013). However, it may be pointed out here that systematic studies have not been conducted so far to study the M.Ed. curriculum and syllabi of various universities and institutions. The present study attempts to analyse the M.Ed. curricula being implemented by different universities in the country to identify the gaps and deficiencies in the preparation of quality teacher-educators. This assumes significance in the light of NCFTE 2009 and NCTE Regulations–2014.

Objectives of the Study

The objectives of the study included the following.

- To study the status of M.Ed. Curriculum in terms of course structure, work days and hours, practicum, research component, examination and evaluation system in universities in the light of NCFTE–2009;
- To find out the weightage assigned to core theory and elective/ optional courses in terms of external and internal evaluation; and
- To suggest the direction for revising the M.Ed. curriculum based on the findings of the study with a view to producing quality teacher-educators.

Method

Sample

There are 230 universities which offer M.Ed. course in the country. All the universities were contacted to send their M.Ed. curriculum and syllabus. Information was received from 28 universities which were offering general and special education courses. The twenty-eight universities were classified based on regional representation (Northern region=14, Southern =3, Eastern=2, and Western=9). The details of the participating universities are given in subsequent paras).

- (i) *Northern Region:* Delhi University, New Delhi; Jamia Millia Islamia, New Delhi; Aligarh Muslim University, Aligarh; Banaras Hindu University, Varanasi; University of Jammu, Jammu; Kurukshetra University, Kurukshetra; Guru Gobind Singh Indraprastha University, New Delhi; Mahatma Gandhi Kashi Vidyapeeth, Varanasi; Maharshi Dayanand University, Rohtak; Himachal Pradesh University, Shimla; V.B.S. Purvanchal University, Jaunpur; Maharshi Dayanand Saraswati University, Ajmer; Lovely Professional University, Jalandhar; and Amity University, Noida.
- (ii) *Southern Region:* University of Mysore, Mysuru; Osmania University, Hyderabad; and University of Calicut, Calicut.
- (iii) *Eastern Region:* Sikkim University, Gangtok; Gauhati University, Guwahati.
- (iv) *Western Region:* Guru Ghashidas Vishwavidyalaya, Bilaspur; University of Mumbai, Mumbai; Shivaji University, Kolhapur; Devi Ahilya Vishwavidyalaya, Indore; Sant Gadge Baba Amravati University, Amravati; University of Pune, Pune; Gujarat University, Ahmedabad; Barkatullah University, Bhopal; and S.N.D.T. Women's University, Mumbai.

Procedure

Desk analysis was used for analysing the M.Ed. curricula procured from 28 universities. The analysis covered course structure of different M.Ed. curricula with regard to aspects such as foundation/core subjects, elective subjects, practicum, evaluation scheme and pedagogies used for transacting the curriculum. The analysis also covered other major components of curricula such as year of introducing the course (General and Special Education), nature of

examination—annual or semester system, admission procedure, teaching hours/credits earmarked for each course/paper, and the medium of instruction. Analysis sheets were designed for different components. Tables and graphs were prepared for organisation of the data from the analysis sheet. The methodology was analytic–descriptive and the available information on the concerned University website was also used.

Results

The analysis is based on comparison of the 28 curricula against the sample provided by the accrediting organisations such as University Grants Commission, National Council for Teacher Education, and Rehabilitation Council of India. It examined the extent to which the curriculum structure of different universities is aligned to the structure provided by the accrediting agency. The findings are divided into four sections: (i) A macro-view of the curricula, (ii) analysis of M.Ed. (General) curricula, (iii) M.Ed. (Special Education) curricula, and (iv) suggestions for reconstructing of M.Ed. courses in the light of NCFTE–2009 and NCTE Regulations–2014.

Section I: A Macro-view

In this section, a macro-view of 28 sampled universities in term of renewal of curriculum, type of course, examination, eligibility criteria for admission, teaching hours, medium of instruction and attendance have been discussed.

Renewal of Curriculum

Table 1 reveals the status of renewal of M.Ed. curriculum in different universities in the light of NCFTE–2009. It may be stated that data were available only for 20 universities.

Table 1
Renewal of Curriculum

| S. No. | Year of Renewal | Name of the University | Number of the Universities (N=20) |
|--------|-----------------|---|-----------------------------------|
| 1. | 2000–2004 | Gauhati University, Guwahati (2002); Himachal Pradesh University, Shimla (2004); Osmania University, Hyderabad (2003) | 3 |
| 2. | 2005–2009 | Delhi University, New Delhi (2009); University of Jammu, Jammu(2009); Shivaji University, Kolhapur (2009); Sant Gadge Baba Amravati University, Amravati(2006). | 4 |

| | | | |
|----|-----------|---|----|
| 3. | 2010–2015 | Jamia Millia Islamia, New Delhi (2010); Banaras Hindu University, Varanasi (2013); Kurukshetra University, Kurukshetra (2011); Guru Gobind Singh Indraprastha University, New Delhi (2012); Maharshi Dayanand University, Rohtak (2012); Maharshi Dayanand Saraswati University, Ajmer (2010); University of Mumbai, Mumbai (2012); Devi Ahilya Vishwavidyalaya Indore (2012); University of Pune, Pune, (2010); Gujarat University, Ahmedabad (2011); Barkatullah University, Bhopal (2008); University of Mysore, Mysuru (2010); University of Calicut, Calicut; Sikkim University, Gangtok (2010). | 13 |
|----|-----------|---|----|

It is evident from the Table 1, that out of 20 universities, 13 had revised their M.Ed. curriculum in the light of NCFTE–2009 but revised it partially. The Gauhati University, Himachal University, and Osmania University revised the curriculum during 2002 to 2004 and Sant Gadga Baba University during 2006.

The Course Structure

The course structure is based on the pattern of examination. Table 2 provides information about the annual vs. semester systems followed in different universities.

Table 2
Annual Vs. Semester Systems Followed in Different Universities

| S. No. | Category | Name of the Universities | Number |
|--------|----------|--|--------|
| 1. | Annual | Delhi University, Kurukshetra University, Mahatma Gandhi Kashi Vidyapeeth, V.B.S. Purvanchal University, Maharshi Dayanand Saraswati University, Shivaji University, Sant Gadge Baba Amravati University, S.N.D.T. Women's University, Gauhati University | 9 |
| 2. | Semester | Jamia Millia Islamia, Aligarh Muslim University, Sikkim University, Banaras Hindu University, University of Jammu, Guru Ghashidas Vishwavidyalaya, Guru Gobind Singh Indraprastha University, University of Mumbai, University of Mysore, Osmania University, Devi Ahilya Vishwavidyalaya, Maharshi Dayanand University, Himachal Pradesh University, University of Calicut, University of Pune, Gujarat University, Barkatullah University, Lovely Professional University, Amity University. | 19 |

The annual system of examination was followed in nine universities. Other universities followed semester system which consisted of two semesters in one academic year. Both the semesters were of 15 to 18 weeks each. The University of Calicut specified that the two semesters should be of 105 days each. The University of Gujarat mentioned that the working days should not be less than 90 days comprising 450 teaching hours for each semester. There was a mandatory attendance of 75 per cent in most of the Universities. There was a trend to adopt the semester system. Only a quarter of the universities still follow the annual course modality.

Eligibility Criteria for Admission

Table 3 presents the eligibility criteria followed by sampled universities for admission in M.Ed. programme.

Table 3
Eligibility Criteria for Admission in M.Ed.

| S.No. | Category | Name of the Universities | Number |
|-------|---------------------------|---|--------|
| 1. | Merit Basis | Aligarh Muslim University, Banaras Hindu University, Guru Gobind Singh Indraprastha University, Himachal Pradesh University, V.B.S. Purvanchal University, Maharshi Dayanand Saraswati University, Lovely Professional University, Guru Ghashidas Vishwavidyalaya, University of Mumbai, Shivaji University, Devi Ahilya Vishwavidyalaya, Sant Gadge Baba Amravati University, University of Pune, Gujarat University, Barkatullah University, S.N.D.T. Women's University, University of Mysore, Sikkim University, Gauhati University, and Amity University | 20 |
| 2. | Both (Entrance and Merit) | Jamia Millia Islamia, Delhi University, University of Jammu, Kurukshetra University, Mahatma Gandhi Kashi Vidyapeeth, Osmania University, Maharshi Dayanand University, and University of Calicut. | 8 |

The NCFTE Syllabi/NCTE regulations have left the criteria for admission to M.Ed. for universities to decide. Out of 28 universities, 20 admitted students based on merit of B.Ed. examination and other 8 universities admitted based on merit as well as entrance test. The entry requirement for being eligible for admission into M.Ed. programme was B.Ed. degree with 50 per cent marks in most

of the universities. However, the university of Mumbai and Devi Ahilya Vishvidayalaya, Indore, University of Calicut, and Amity University required 55 per cent marks in B.Ed. as an eligibility criterion for admission into M.Ed. programme. V.B.S. Purvanchal University, Jaunpur (UP) considered graduation, LT or B.T. or equivalent of B.Ed. Apart from B.Ed., Maharshi Dayanand Saraswati University Ajmer specified that Shiksha Shastri, B.T., LT or 2 year B.Ed. or B.Sc. B.Ed. could also apply for this course.

Medium of Instruction

Medium of instruction was generally English. In Pune University the medium of instruction was English and Marathi, whereas in Amravati University it was English, Hindi and Marathi. A few universities had specifically mentioned it in their curriculum document.

Section II: Analysis of M.Ed. Curricula (General)

For a post-graduate professional degree in education, universities had prescribed theory papers which were divided into parts. The first part covered core or foundation courses. The second part comprised optional or elective subjects. The number of core subjects was compulsory whereas the number of optional/elective subjects was more and varied from university to university. The students have to opt two or three out of the prescribed courses by the university.

Foundation/Core Course

The status of core/foundation courses prescribed by various universities is shown in Figure 1.

It appears from Figure 1 that philosophical and sociological foundation of education; psychological foundations of education and methodology of educational research were prescribed as core subjects in all the universities. Some of the universities prescribed more than three core subjects. In Jammu University, educational technology, teacher education, comparative education and curriculum evaluation were covered under foundation course in addition to three papers mentioned above. Further, comparative education and curriculum development in Kurukshetra University; curriculum evaluation in Guru Govind Sing Indraprastha University, New Delhi; curriculum development and economics of education in Osmania University; educational technology and teacher

Number of Universities Having Different Core Courses

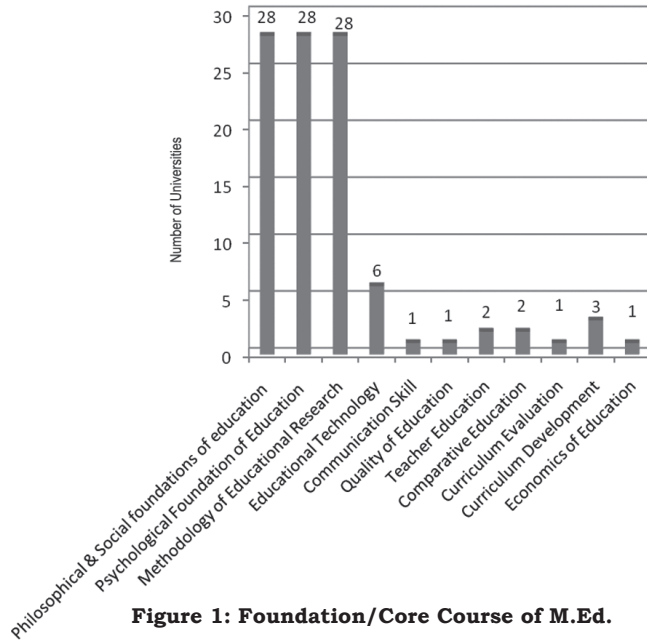


Figure 1: Foundation/Core Course of M.Ed.

education in Shivaji University and educational technology in Gauhati University were prescribed as core subjects under foundation courses. This above analysis shows that almost all universities followed the UGC model curriculum (2001).

Elective/Optional Course

The universities had followed different patterns of offering the optional/ elective papers. The UGC in 2001 had prescribed any 2 out of the 14 specified optional subjects to be offered to M.Ed. students. Some of the universities, namely Himachal Pradesh University (3 of the 7 options), Sant Gadge Baba Amravati University (2 of the 10 options), Delhi University (2 of the 23 options), Gauhati University (2 of the 7 options), University of Calicut (2 of the 10 options), MDS University, Ajmer (2 of the 6 options), Mahatma Gandhi Kashi Vidyapeeth, Varanasi (2 of the 8 options), Jammu University (2 of the 7 options) and Pune University (3 of the 11 options) had offered the optional subjects. Table 4 provides the optional papers prescribed in sampled universities.

Table 4
Elective Subject of M.Ed. Course

| S. No. | Optional Paper/ Elective Subject | Number of Universities | S. No. | Optional Paper/ Elective Subject | Number of Universities |
|--------|---|---------------------------|--------|---|---------------------------|
| 1. | Guidance and Counselling | 24 | 16. | Secondary and Higher Secondary Education | 1 |
| 2. | Distance Education | 7 | 17. | Inclusive Education | 5 |
| 3. | Value and Human Rights | 11 | 18. | Economics of Education | 3 |
| 4. | Language Education | 6 | 19. | Futuristic Education | 1 |
| 5. | Comparative Education | 10 | 20. | Educational Administration | 13 |
| 6. | Teacher Education | 18 | 21. | Mathematics Education | 2 |
| 7. | Special Education | 14 | 22. | Education for Mental Health | 2 |
| 8. | Educational Technology | 22 | 23. | Experimental Education | 1 |
| 9. | Educational Measurement and Evaluation | 18 | 24. | History and Problems of Indian Education | 4 |
| 10. | Curriculum Development | 16 | 25. | Social Science Education | 3 |
| 11. | Management, Planning and Finance of Education | 8 | 26. | Cognitive, Culture and Education | 1 |
| 12. | Environmental Education | 11 | 27. | Equality and Education | 1 |
| 13. | Science Education | 6 | 28. | Business Education | 1 |
| 14. | Yoga Education | 5 | 29. | Art Education | 1 |
| 15. | Elementary Education | 4 | 30. | Vocational Education | 1 |

Most of the universities offered Guidance and Counselling, Teacher Education, Educational Technology, Educational Measurement and Evaluation, Curriculum Development, Educational Administration, Environmental Education, Values and Human Rights, Comparative Education and Special Education as optional/elective papers.

Practicum of M.Ed. Course

The component of practicum included supervision and evaluation of practice-teaching and other aspects of school experience of

B.Ed./D.Ed students, reflection and maintenance of journal, presentation/panel discussion in seminar, working with community/visit to an Institute, project work/action research and paper-wise sessional work in M.Ed. course. These are presented in Figure 2.

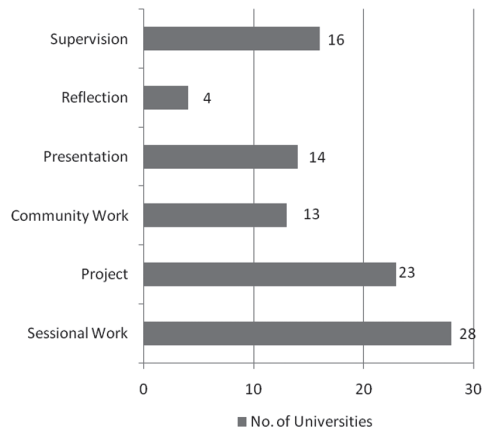


Figure 2: Practicum of M.Ed. Course

Figure 2 shows that sessional work for each theory paper was a compulsory component and was followed in all the universities. It was evaluated internally by the subject of practicum teacher or a committee. The classroom observation of B.Ed. trainees and supervision of their internship programme was made part of practical assignments. Sixteen universities had mentioned supervision of B.Ed. students' internship programme. These universities were: Sikkim University; Guru Govind Singh Indraprastha University, University of Mysore, Mahatma Gandhi Kashi Vidyapith, Varanasi; Maharashtra Dayanand University, University of Pune, Gujarat University, Barkatullah University, Banaras Hindu University (10 Lessons), University of Jammu (8 Lessons), University of Mumbai (5 Lessons), Shivaji University (4 Lessons), and Himachal Pradesh University (20 Lessons). Reflection and maintenance of reflective journal was a feature in some universities like Sikkim University, Mysore University, and University of Pune. Presentation/Panel Discussion in Seminar was included in fourteen universities as part of practicum. Working with Community/Visit was included in practicum in thirteen universities. Twenty-three sampled universities had made project work /action research as an integral component of M.Ed. curriculum.

Evaluation Scheme of M.Ed. Course

Two patterns, marking and grading systems, were adopted by the universities for evaluating M.Ed. course. Marks in some universities were also converted into grades. Marking system was adopted in most of universities where as marking and grading system

were followed in Sikkim University, Banaras Hindu University, University of Jammu, GGSIPU, University of Mumbai, Shivaji University, University of Pune, and Gujarat University. Devi Ahilya Vishwavidyalaya exclusively followed grading system in evaluation scheme. Most of the universities assigned 100 marks both for external and internal assessment for theory paper (70/80 for external and 30/20 for internal). In evaluation of dissertation as part of M.Ed. Programme, majority of universities followed allocation of marks for dissertation between external and internal assessment ranging marks from 200 to 70. In respect of viva voce in dissertation, some universities have clearly specified marks exclusively for it whereas others have mixed up with sessional and practical work.

Pedagogies Used during Teaching-learning Process

Majority of universities included seminar, lecture cum discussion, self-study, project/research, use of ICT, field visit, interview, demonstration, etc., as methodologies for curriculum transaction. ICT was introduced in all universities with focus on technologies and its prospects as separate paper in M.Ed. curriculum.

Section III: M.Ed. (Special Education)

The special education courses at graduation and post-graduation levels are accredited by the Rehabilitation Council of India (RCI), which also provides guidelines for M.Ed. Special Education. The structure of the course suggested by the RCI covers three theory courses, two specialisations and optional/elective courses. Courses in theory carry 24 credits followed by 12 credits for practicum and 12 credits for dissertation. The SNDT Women University, Mumbai followed the RCI course structure. The other two universities, namely, Banaras Hindu University and Kurukshetra University had made modifications but, by and large, followed the RCI guidelines. The three core theory courses included Foundations of Special Education, Psychological Foundations of Special Education and Methodology of Educational Research. The course title in the three universities had small variations but the content was almost the same. In the case of Kurukshetra University, it gives significant milestones in the course on 'Developments in Special Education'. The core courses were followed by specialisation courses. These courses covered identification and assessment; and curriculum and intervention in Learning Disability (LD) in the SNDT University

for Women, Mumbai. The same type of course was available for specialisation in Mental Retardation (MR). A student could offer one out of the two specialisations – LD or MR. In Banaras Hindu University, specialisation was only in the education of Children with Visual Impairment. In Kurukshetra University the first course on specialisation was on Psycho-social and educational implications for Children With Visual Impairment (CWVI).

Elective Courses

The number of elective courses was highest in the SNDT Women's university, Mumbai. These were Management of Special Education, Educational Technology and Curriculum Development. Out of these, one elective course was to be selected by the M.Ed. (Special Education) students. The Banaras Hindu University offered two elective courses. While Kurkshetra University did not offer any elective course, RCI does mention elective courses in the suggested course structure.

Dissertation

Dissertation in M.Ed. (Special Education) was compulsory for students in all the three universities. It is labelled as 'Thesis' in SNDT University, Mumbai while in the other two universities it is termed as dissertation. In all the three universities, it required both a written document and a viva-voce. In Banaras Hindu University a candidate was also required to give a seminar based on the first three chapters.

Practicum

Action research and debate were two areas which were conspicuous by their absence in all the universities as well as in RCI programme. The provision of seminar was provided in Banaras Hindu University and systematic observation in SNDT University for Women and Kurukshetra University. Group and project works were provided in SNDT University. Assignments and practical work in psychology were provided in all the three universities. Very few activities were mentioned in M.Ed. (Special Education) courses in Banaras Hindu University and Kurukshetra University. Only SNDT University course mentioned course study, systematic observation in pre-service teacher, training classes, conducting parent-teacher meetings, etc.

Evaluation Scheme

Credit/Grades were used in the evaluation of M.Ed. (Special Education) in SNTD University and Banaras Hindu University. There was provision of both external and internal assessment in respect of theory papers, dissertation and practical work in all the three universities.

Section-IV: Reconstruction of M.Ed. Course

Keeping the above findings in view, there is a need to reconstruct M.Ed. curriculum as per the recommendation of NCFTE 2009 and NCTE Regulations, 2014. The M.Ed. course should be of two years for preparing professional teacher-educators and other educational professionals. M.Ed. degree need to be with specialisation either in elementary or in secondary education. There should be at least 200 working days each year, exclusive of the period of admission and inclusive of classroom transaction, practicum, field study and conduct of examination. The institution should work for a minimum of 36 hours in a week during which faculty and students should be available for interaction, dialogue, consultation and mentoring. The minimum attendance should be 80 per cent in theory courses and practicum, and 90 per cent in case of field attachment. The curriculum of the two-year M.Ed. programme should comprise the components of theory, practicum, internship, attachment and assessment.

Theory Course

The theory course should be divided into core courses and specialisation courses. The main core courses should comprise of perspective courses, tool courses, and teacher education courses. Critical reflection on gender, disability and marginalisation should cut across the courses in core and specialisations. Similarly, skills pertaining to ICT and educational technology should be integrated in various courses in the programme. Besides, yoga education shall form an integral part of the curriculum.

Practicum

Organisation of workshops and seminars to enhance professional skills and teaching modality of the various courses taught should be the part of practicum.

Internship

Field attachments/internship/immersions should be for a minimum period of four weeks. The aim should be to engage students with field-based situations and work in schools and to provide an opportunity for reflection and developing skills. Systematically planned field internship/attachment in a teacher education institution, and in the specialisation area chosen by the student should be organised during the programme. Close mentorship by faculty in relevant areas should be provided for in the programme in the form of tutorials, guided reading groups, field attachment, and guided research dissertation.

Assessment

For each theory course, at least 30 per cent weightage should be assigned for continuous internal assessment and 70 per cent for examination conducted by the examining body. The weightage for the internal and external assessment for theory and practicum courses should be such as prescribed by the affiliating university based on the above formulation. The internal assessment should be based upon individual/ group assignments, seminar presentations, field attachment appraisal reports, etc. One-fourth of the total marks/credits should be assigned to practicum, internship, field attachment and dissertation.

Conclusion

The analysis of M.Ed. curriculum indicates lack of coordination and linkages among different regulatory bodies (UGC, NCTE, RCI) which are responsible for preparing curriculum framework for teacher education. All universities are following the M.Ed. curriculum recommended by UGC Framework, 2001. No university has revised fully the M.Ed. (General) curriculum in the light of NCFTE, 2009. All the three universities running M.Ed.(Special Education), by and large, followed RCI guidelines. Action research and debate are not included in RCI programme. Credit/Grades are used in evaluation of M.Ed. (Special Education). Keeping the above findings related to M.Ed. curriculum in view, there is a need to reconstruct M.Ed. curriculum. There should be close collaboration between regulatory bodies (UGC, NCTE, and RCI) which are responsible for preparing curriculum framework for teacher education programmes. All the university should revise the M.Ed. curriculum in the light of NCFTE –2009 and NCTE regulation, 2014.

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The Causal Relationship between Mathematical Creativity, Mathematical Aptitude and Mathematical Problem-Solving Performance A Cross-Lagged Panel Analysis

TARUN KUMAR TYAGI*

ABSTRACT

The Cross-lagged Panel Analysis (CLPA) was used to investigate the causal relationship between mathematical creativity, mathematical aptitude and mathematical problem-solving performance. 480 students studying in Class VIII were selected through a random cluster technique from nine Intermediate and High Schools of Varanasi District, India. Mathematical creativity, mathematical aptitude and mathematical problem-solving performance tests were administered three times, at intervals of four months. The CLPA uncovered a significant relationship and revealed that mathematical creativity was found to be causally predominant over mathematical aptitude (i.e., higher mathematical creativity leads to higher mathematical aptitude). Furthermore, mathematical problem-solving performance was found to be the cause of mathematical aptitude and mathematical creativity both (i.e., higher mathematical problem-solving performance leads to higher mathematical aptitude and mathematical creativity).

Keywords: *Mathematical Creativity, Mathematical Aptitude, Mathematical Problem-Solving Performance.*

Introduction

The concept of mathematical creativity originated in France in 1902 when an extensive questionnaire was published in French

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periodical *L'Enseignement Mathématique* to study mathematical creativity. This questionnaire and a lecture on creativity delivered by the distinguished mathematician Henri Poincaré to the '*Société de Psychologie*' inspired Hadamard, to investigate the psychology of mathematical creativity (Hadamard, 1945). Poincaré and Hadamard are the key persons who have done commendable work in the area of mathematical creativity and highlighted that discovery in mathematics are the combination of ideas. Mathematical creativity cannot occur in a vacuum and needs a context in which the individual moves forward through previous experiences. The ability to create novel ideas/objects in mathematics is an example of mathematical creativity.

Several definitions of mathematical creativity have been put forward but no acceptable definition has been found yet. Poincaré (1948) defined mathematical creativity as the ability to discern, or choose. Hadmard (1945) described that the roots of creativity lie in the long unconscious work of incubation, and in the unconscious aesthetic selection of ideas that thereby pass into consciousness. Mathematical creativity was considered to be the most important ingredient for solving problems divergently. Mathematical creativity plays a vital role in the full cycle of advanced mathematical thinking (Ervynck, 1991). Guilford (1968) has pointed out that creativity is the key to education in its fullest sense and the solution to mankind's most serious problems. For the development of a nation there is a great need to identify creative doctors, mathematicians etc. A creative mind is imaginative, full of hypothesis, theories and dreams (Dunn, 1976). It seeks to discover the facts, generalisations, and understanding that may appear to be widely accepted. Empirical evidences have shown that factors such as lack of interest, negative attitude towards mathematics, self concept in mathematics, mathematical intelligence, use of traditional methods of teaching and so on (Jhony, 2008; Mann, 2005; Singh, 1985; Sriraman, 2004) affect the performance convergently and divergently both in mathematics.

The recent upsurge in the research conducted on problem-solving performance in mathematics stems from the apparent belief that children's feelings about themselves are the key factors in problem-solving performance which helps in the development of mathematical creativity. Mathematical problem-solving performance appears to a certain extent to be as complex and subtle as to defy description and analysis. Polya (1957) defined mathematical problem-solving as a process that involved four

dynamic activities: understanding the problem, making a plan, carrying out the plan and looking back. Problem solving involves the acquisition and application of mathematical concepts and skills in a wide range of situations, including non-routine, open-ended and real world problems. Torrance (1960) and Parnes (1967) found the close conceptual link between problem solving and creativity. Toynbee (1964) stated that creative problem solvers are the history making talents in any area of human endeavour, nevertheless, the causal relationship between these two constructs is yet to be clearly defined. Due to the optimum utilisation of human and natural resources, there is always a necessity of potential human resources. Bingham (1937) defined that aptitude is a condition symptomatic of a person's relative fitness, of which one essential aspect is his readiness to acquire proficiency—his potential ability—and the other is his readiness to develop an interest in exercising that ability (p. 18). According to the theory of aptitude, individuals differ in their readiness to profit from a particular treatment and individuals may adapt their situations to fit their own characteristics; therefore, the learners' aptitudes help to create an environment to achieve optimal learning.

Research in the field of mathematical creativity and mathematical ability has been reported by Katoou, Kontoyianni, Pitta-Pantazi, and Christou, (2013) who concluded that mathematical creativity is the subcomponent of mathematical ability. The relationship of mathematical creativity has been studied with problem-solving performance in mathematics (Tyagi, 2015; Somashekhar, 1998; Singh, 1993); interest patterns (Singh, 1988), general creativity (Singh, 1990). Manchanda and Prakash (2000) found a significant relationship between problem-solving ability and mathematical creativity. Johny (2008) studied the effect of some environmental factors on mathematical creativity and reported that mathematical creativity is significantly related with intelligence, attitude towards mathematics and self-concept in mathematics. A significant relationship was found between mathematical creativity and mathematical achievement (Singh, 1986; Walia, 2012; Sethi, 2012; Bahar and Maker, 2011). Somashekhar (1998) and Singh (1993) reported that mathematical creativity does not contribute significantly in the development of problem-solving performance in mathematics. On the other hand, Khichi (1994) reported that problem-solving in mathematics is the most important method to develop mathematical creativity among children and adults.

In addition, mathematical creativity was found to be significantly related to mathematical aptitude (Jensen, 1973; Tuli, 1979; Tyagi, 2014) as well as scientific aptitude (Verma, 1994; Srivastava, 1992). Aptitude was found to be a significant explanatory variable of elementary statistical performance (Woodward and Galagedera, 2006). Akpan (1991) reported that student's attributional factors (motivation, creativity and attitude towards mathematics) have no direct effect on their ability to solve mathematical problems.

The foregoing discussion shows about the paucity of research about the relationship between mathematical creativity, mathematical aptitude and mathematical problem-solving performance. As it is a known fact that simple correlation is not proof of causation. Further, it is not established that which variable is the cause of the other and if so, what is the direction of causation. This issue assumes significance for the development of effective mathematics teaching-learning strategies. The present study examines the directionality of the causal relationship between mathematical creativity, mathematical aptitude and mathematical problem-solving performance.

For establishing causal relationship, one needs to conduct experimental studies. But due to ethical reasons, in an experiment, a 'true' experimental design in the natural settings is formidable. Cross-lagged panel analysis is a quasi-experimental design (Campbell and Stanley, 1963) that indicates causal relation between the two variables measured at two or more time points simultaneously. Therefore, cross-lagged panel analysis was used to analyse the data.

Method

Sample

Data for the present study were collected from 480 participants (83 urban males, 107 urban females, 118 rural males, and 172 rural females), studying in class eight, in nine Intermediate and High Schools located in Varanasi District, India. The sample was selected employing random cluster technique. The mean age of the selected sample was 13 years.

Tools

The following tools were administered to the participants in the study.

1. *Mathematical Creativity Test*

The Mathematical Creativity Test developed by Singh (1985) was used to measure mathematical creativity. There were eight items related to creativity in mathematics in the test with an open range of possible test scores. Five types of activities, such as patterns in mathematics, new relationship test activity, nine dot areas, subsets and similarities, have been included in the test. Test-retest reliability of the total mathematical creativity test was found to be 0.81. The inter-item correlation technique was used to establish the validity of the test. The correlation of the total activity scores with grand total was found in the range between 0.63 to 0.84 for urban sample and 0.49 to 0.78 for the rural sample. The raw scores of each dimension, i.e., fluency, flexibility, and originality, were converted into 'T' scores with a Mean = 50 and SD = 10. The 'T' scores of each dimension were added to get the composite scores of mathematical creativity of each student.

2. *Mathematical Aptitude Test*

Braswell's (1978) Mathematical Aptitude Test was adapted in Hindi by the investigator and was used to measure the mathematical aptitude among middle school students. The test included 40 items related to the different branches of mathematics, i.e., Arithmetic, Algebra, and Geometry. The items of mathematical aptitude test were based on knowledge, comprehension and application dimension of Blooms Taxonomy (Bloom, 1956). The reliability of this test was found to be 0.88 on 200 urban and 200 rural students by using rational equivalence method. The multidimensional analysis was performed on 160 (83 boys and 77 girls) participants to establish the validity of the test. All the correlations were found in the range of 0.64 to 0.91.

3. *Mathematical Problem-Solving Performance Test*

To measure problem-solving performance in mathematics, the investigator used the Hindi adaptation of Krutetskii's Problem-Solving Test developed by Singh (1993). The test consisted of 15 items and was classified into two parts. Part-I consists of eight mathematical problems which are not based on content but related to the use of mathematical concepts in solving real life situations. Part-II consists of seven problems. Out of which one problem is of puzzle type and remains problems are situational problems. The test-retest reliability of the test was found to be 0.70. It indicates

moderate consistency of the test. Validity of mathematical problem-solving test was calculated with the help of item-total correlation technique and found to be significant.

Procedure

The data were collected in three measurements phases with a lag of four months. All the instructions were adhered to clearly before the administration of each test for establishing rapport among students. In the first phase, there were 850 students. In the second and third phases some students left out and new joined. Because of the use of cross-lagged panel analysis, complete data was required to be presented for all time periods (Kenny, 1975). Finally, 480 of VIII standard students participated in this study, which were found common in three measurement waves (T_1 , T_2 , and T_3). Back translation procedure was used to ensure accuracy and equivalence to understand the problems.

Cross-Lagged Panel Analysis

In the absence of control of extraneous variables as well as the absence of theoretical relationship between mathematical creativity, mathematical aptitude and mathematical problem-solving performance upon which path analysis and regression analysis depends, the cross-lagged panel analysis (CLPA) is the most appropriate statistical procedure to detect the direction of causality. It is primarily an exploratory procedure designed to uncover 'the preponderance of causation' (Crano and Mellon, 1972) by eliminating alternative explanations owing to the spuriousness (Kenny, 1975). It requires at least two variables, each measured at two points in time. If one variable (e.g., mathematical creativity) measured at time 1, is consistently followed by a change in the other variable (e.g., mathematical aptitude) measured at time 2, and if the converse relationship is not true, then one can infer a direction of causality. This technique was independently suggested by Campbell (1963), and extensively reviewed (Kenny, 1979). This method utilises 'panel data', as indication from Figure 1.

As can be seen from Figure 1 that two variables X (Mathematical Creativity) and Y (Mathematical Aptitude) and three lags (time 1, time 2 and time 3) generate six variables (X_1, X_2, X_3, Y_1, Y_2 , and Y_3) and the six variables generate fifteen correlations: six autocorrelations ($r_{X_1X_2}, r_{Y_1Y_2}, r_{X_2X_3}, r_{Y_2Y_3}$; and $r_{X_1X_3}, r_{Y_1Y_3}$) three synchronous correlations ($r_{X_1Y_1}, r_{X_2Y_2}$ and $r_{X_3Y_3}$) and (cross-section' or static); and

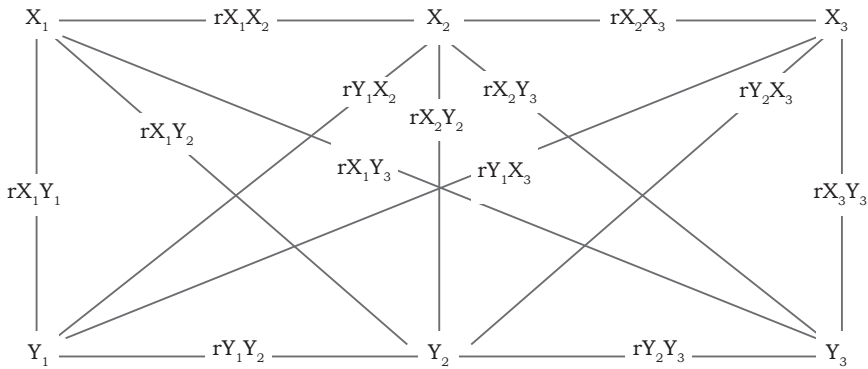


Figure 1. Cross-lagged Panel Correlation Paradigm (X and Y are variables and 1, 2, and 3 are time)

six cross-lagged correlations (rx_{1y_2} , ry_{1x_2} , rx_{2y_3} , ry_{2x_3} , and rx_{1y_3} , ry_{1x_3}). A CLPC is a method for testing spurious relationships by comparing the cross-lagged differential: $rx_{1y_2} - ry_{1x_2}$ ($rx_{1y_2} - ry_{1x_2}$) and similarly ($rx_{2y_3} - ry_{2x_3}$) and ($rx_{1y_3} - ry_{1x_3}$). If the data indicates a 2w2v (two wave two variables) model, the cross-lagged differential is positive, concluding the causal predominance to be that of X causing Y, and if the cross-lagged differential is negative, concluding causal predominance to be that of Y causing X. No significant difference in the cross-lags suggests that the correlation between the variables is spurious. The synchronous correlations should be moderate to high (0.30 or above) for the effective use of cross-lagged analysis and a large sample size is generally important because of the expected difficulty in obtaining statistically significant differences between the cross-lag correlations.

The null hypothesis of CLPC is that the two variables are not causally related ($H_0: rx_{1y_2} = ry_{1x_2}$) but seem to be affected by some other set of common causes of 'third variable' (Simon, 1954). In order to interpret the results of cross-lagged analysis, two assumptions must be satisfied: synchronicity and stationarity (Kenny, 1975; Kenny and Harackiewicz, 1979). Synchronicity means that the variables involved are measured at the same point in time, a condition which is satisfied in this study. Stationarity, tested by comparing the synchronous correlations, means that there is no change over time in the strength, direction, or composition of the causes of a variable or the causal structure of the variables does not change over time. No significant differences between the synchronous correlations indicate that variables are stationary. If quasi-stationarity exists, Pearson-Filon (PF) test may

be effectively used to test the significance of the difference between two dependent/correlated correlations.

Results

Data appeared as neither perfectly stable nor stationary due to abnormal changes in autocorrelation and synchronous correlation. In this situation, quasi-stationarity exists, therefore, communality/reliability ratios are used to correct the cross-lagged correlations. The implication of quasi-stationarity is that the synchronous correlations would be equal if corrected for attenuation due to measurement unreliability (Kenny and Harackiewicz, 1979). Otherwise, variables that decrease in reliability would erroneously appear to be the causes, while those that increase would erroneously appear to be the effects (Kahle and Berman, 1979; Campbell, 1963). The reliability ratio for mathematical aptitude was found fairly low, i.e., (0.79), indicating decreasing reliability, whereas the reliability of the mathematical creativity and mathematical problem-solving performance measures were found 1.08 and 1.07 respectively. Consequently, the difference in unadjusted cross-lagged correlations was caused primarily by the decreasing reliability of the mathematical aptitude measure. After the reliability adjustments the real cross-lagged difference appeared.

Table 1
Corrected Cross-lagged Correlations between Mathematical Creativity (MC), Mathematical Aptitude (MA) and Mathematical Problem-Solving Performance (MP) at Time-1 to Time-3 (N=480)

| Sources | Time-1 to time-2 Cross-lags | | z | p | Time-1 to time-3 Cross-lags | | z | p |
|---|--|--------------|-------|----|--|--------------|-------|-------|
| Mathematical Creativity – Mathematical Aptitude | MC ₁ MA ₂ MA ₁ MC ₂ | 0.58 0.54 | -1.01 | NS | MA ₁ MC ₃ MC ₁ MA ₃ | 0.52 0.61 | -2.61 | <0.05 |
| Mathematical Aptitude– Mathematical Problem-Solving Performance | MA ₁ MP ₂ MP ₁ MA ₂ | 0.49 0.56 | -1.82 | NS | MA ₁ MP ₃ MP ₁ MA ₃ | 0.57 0.63 | -1.80 | NS |
| Mathematical Problem-Solving Performance– Mathematical Creativity | MP ₁ MC ₂ MC ₁ MP ₂ | 0.63 0.59 | 1.25 | NS | MP ₁ MC ₃ MC ₁ MP ₃ | 0.69 0.60 | 2.99 | <0.05 |

z is based on Pearson-Filon. If z ≥ 1.96, difference in cross-lags at 0.05 level (two-tailed)

As can be seen from the Table 1 that the obtained cross-lagged correlations between $r_{MC_1MA_3}$ and $r_{MA_1MC_3}$ were found significant but moderate. It shows that one variable may be the cause of other but from the results, the direction of causation is not clear, i.e., which one is cause and other is effect. Further to examine the direction of causation the Pearson-Filon z value of the differences between $r_{MC_1MA_3}$ and $r_{MA_1MC_3}$ was reported and found to be significant but negative. The minus sign of z value indicates the opposite directional support of the significant difference between cross-lagged correlations. Therefore, it means that mathematical creativity was found to be the cause of mathematical aptitude.

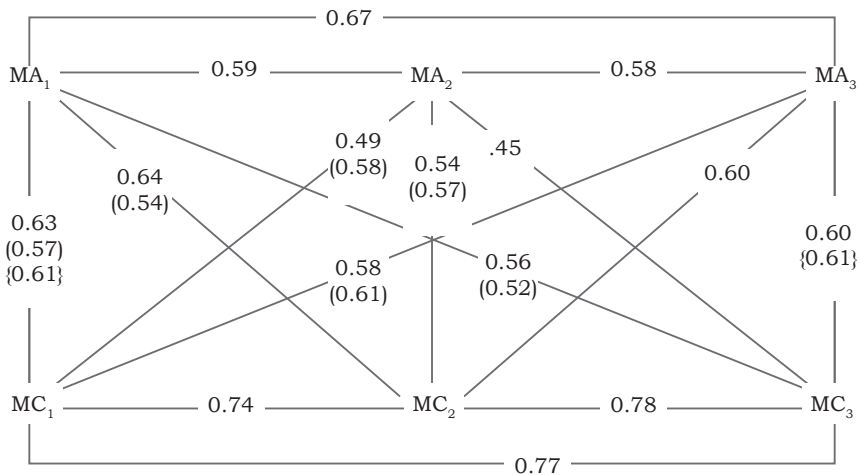


Figure 2: Cross-lagged Panel Paradigm of the Relationship between Mathematical Creativity and Mathematical Aptitude

- () Correction in Synchronous and Cross-lagged Correlation at time 1, 2, and 3
- { } Correction in Synchronous and Cross-lagged Correlation at time 1, 2, and 3

All of the autocorrelations in Figure 2 are substantively high and statistically significant, thus, suggesting stability and reliability in variables over time but mathematical creativity appears to be a more stable construct over time than mathematical aptitude. The synchronous correlations reflect on the consistency of relationship between two variables. An abnormal change in the correlations between mathematical creativity and mathematical aptitude from time T_1 to T_2 may indicate the possible influence of a third factor.

Table 1 presents that the Pearson-Filon z value of the differences between $r_{MA_1MP_3}$ and $r_{MP_1MA_3}$ was not found to be significant, however, it also highlights the direction of the causal relationship that mathematical problem-solving performance was found to be a cause of mathematical aptitude at 0.10 level.

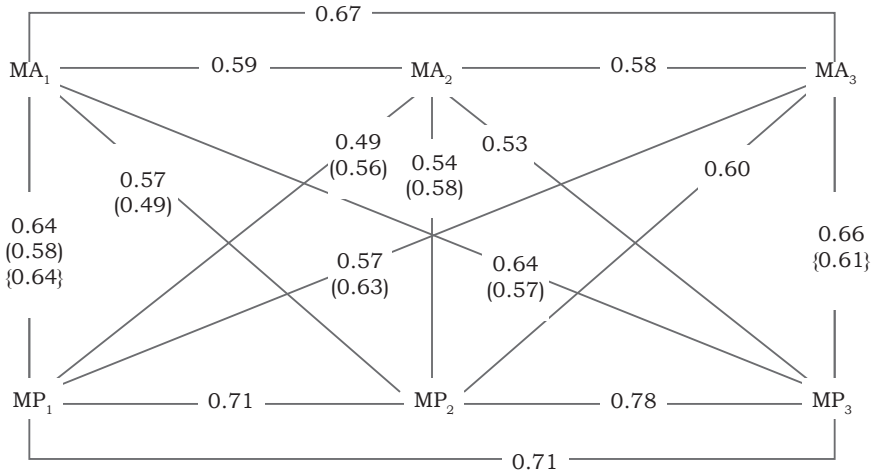


Figure 3: Cross-lagged Panel Paradigm of the Relationship between Mathematical Aptitude and Mathematical Problem-Solving Performance

- () Correction in Synchronous and Cross-lagged Correlation at time 1, 2, and 3
- { } Correction in Synchronous and Cross-lagged Correlation at time 1, 2, and 3

Figure 3 shows that auto-correlations were of large magnitude, indicating high consistency of mathematical problem-solving performance over time than mathematical aptitude. Synchronous correlations were found to be significant and revealed a statistical relationship between mathematical aptitude and mathematical problem-solving performance (a priori relationship exists), nevertheless, a significant difference between the synchronous correlation of mathematical aptitude and mathematical problem-solving performance from Time-1 to Time-2 may indicate the possible influence of a third extraneous factor.

Table 1 shows that the Pearson-Filon z value of the differences between and was found to be significant. It indicates that mathematical problem-solving performance was found to be a cause of mathematical creativity.

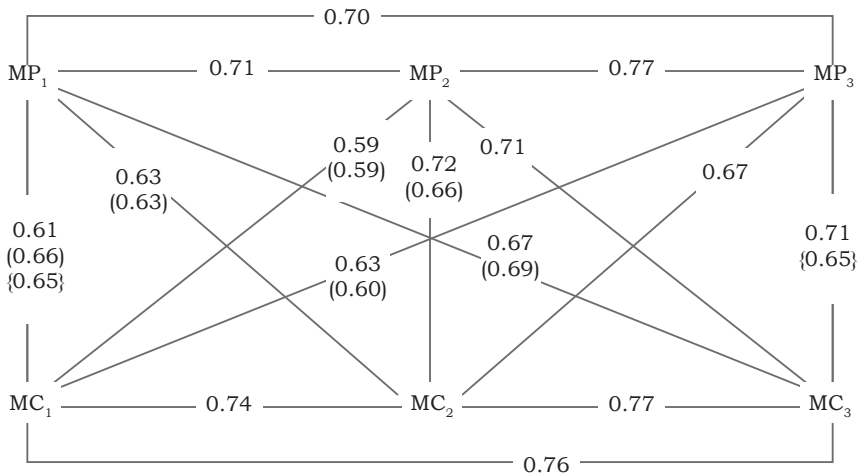


Figure 4. Cross-lagged Panel Paradigm of the Relationship between Mathematical Creativity and Mathematical Problem-Solving Performance

() Correction in Synchronous and Cross-lagged Correlation at time 1, 2, and 3

{ } Correction in Synchronous and Cross-lagged Correlation at time 1, 2, and 3

As can be seen from Figure 4, the auto-correlations were found to be highly significant and also indicate stability within variables over time. Both variables appear to have similar stability over time. The difference between synchronous correlations at time T_1 and T_2 were found to be significant; hence, some moderating variables may be influencing over time and may affecting the relationship between the same variables.

Discussion and Conclusion

The main purpose of this study was to uncover the strength and direction of causality between mathematical creativity, mathematical aptitude and mathematical problem-solving performance. For this CLPA was applied to analyse the panel data in three waves and three variable (3w3v) model. The results are very promising and interesting. In two lag procedures, causal relationship was not found, however, in three lag procedures, mathematical creativity was found to be a stronger cause of mathematical aptitude. Similarly, mathematical problem-solving performance was found to be the cause of mathematical creativity and mathematical aptitude both.

No significant difference (not equal to zero) between the significant cross-lagged correlations indicates that both variables equally cause each other in positive feedback loop making the cross-lag equal (as for mathematical aptitude and mathematical problem-solving performance). But the magnitude of the effect is too small to be detected. One important reason of the equal relationship between mathematical aptitude and mathematical problem-solving performance may be that the development of mathematical aptitude takes longer route by the application of mathematical problem-solving performance. In this study, the time lag was only four months, therefore, such results were obtained. If time lag was one or two years then clear results of the cause of may be obtained. The second reason may be the effect of gender, culture or socio-cultural and educational background differences etc., on the selected variables. Significant differences between the unequal corrected cross-lagged correlations indicate that the relationship between concerned variables was found to be asymmetrical, i.e., they were not influencing each other equally. In addition, non-zero cross-lag difference indicates that the relationship between mathematical creativity, mathematical aptitude and mathematical problem solving performance was found to be not spurious i.e., caused by undesirable third variable. Finally, it may be concluded that mathematical problem-solving performance was found to be the cause of mathematical creativity and mathematical aptitude both.

Synchronous correlations were found to be positive and significant. An abnormal change in the synchronous correlation (i.e., a significantly large difference) may indicate the possible influence of a third factor (Tyagi and Wotruba, 1993). On the basis of two wave analysis, a generalisable statement may not be made about the causal relationship for concerned variables.

Despite the methodological strengths, the present study has also some limitations. First, the present study was conducted in a relatively short time span, i.e., four months only, a long time interval may help in drawing a clear picture of the causal relationship. Second, although evidence was found for causal relationship between them, however, the effect sizes of the cross-lagged paths are generally small. Furthermore, the abnormal changes in auto-correlations were not considered in the correction method. To eliminate the above limitations, the third lag of longer

duration should be used. Future research on this topic might consider other variables such as mathematical intelligence, self-concept in mathematics and mathematical curiosity that may have a significant role in causal relationship which provides the contribution to the theory and practice. Future longitudinal and laboratory research should be conducted to explicitly investigate the relationship between mathematical creativity, mathematical aptitude and mathematical problem-solving performance. The implications of these research findings suggest that a conducive environment needs to be created for solving mathematics problem in the classroom as well as in home.

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Critical Thinking and Academic Achievement among Secondary and Senior Secondary School Students

ROYA SHERAFAT* AND C. G. VENKATESHA MURTHY**

ABSTRACT

The study examined the effect of critical thinking on academic achievement among secondary and senior secondary school students of Mysuru. It also attempted to find out the variations in the critical thinking abilities of secondary and senior secondary level students. The study was conducted on a sample of 625 students of Mysuru City in India using stratified random sampling technique. Murthy's (2014) Mysuru Critical Thinking Scale was administered. Results indicated that the students' academic achievement was affected by their critical thinking. The students with higher levels of critical thinking did better on academic achievement as compared to their low counterparts. Further, there was no difference between the secondary and senior secondary students on their critical thinking abilities. Results shows that critical thinking is an important factor and a correlate of academic achievement.

Introduction

Education is a process of empowering learners to reach their best and it works towards their self actualisation. In this process, developing different faculties of learners become very important. The purpose of education is not to declare them as pass or fail or label them as someone who is at a certain level of achievement, but to shape every learner towards realising one's potentials. This demands that the teacher acts as a facilitator and education should not focus only on the product, but it must also pay

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attention towards the process of learning of all learners. With this inclusive perspective, every single learner needs to be understood and provided opportunities commensurate with her/his abilities. It implies that every single learner should be understood by the teacher. Also, the learners need to be suitably supported and facilitated to make intrinsic meaning of the content and internalise the content meaningfully and grow from one step to the other. Learners should become thinkers. For this to happen, learners need to be enabled to think and question.

Today, the education system is governed and controlled heavily by the examining bodies and is not learning-centred. Students are busy preparing for examinations but not for life. Consequently, once the exam is over, the content studied is conveniently forgotten as the purpose of facing examination is over. Teachers in schools also seem to be anxious to cover syllabus. The whole system appears to be working to please a system called 'examination', but the larger part of the system is not keen on learning, which should be the *hero* in education. It is time, the school education system responds to the requirement of making education a joy of learning for all learners.

It is a fact that in developed societies, academic achievement is one of the significant indicators to predict students' progress in the field of education. For several decades, researchers, scholars, educationists and psychologists, have attempted to understand major factors that are affecting the academic achievement of students. Several researchers (e.g., Biggs and Tinsley, 1970; Lehmann, 1960; Soares, Guisande, Almeida, and Paramo, 2009) have examined different factors that influence the academic achievement of the students. Research findings from several studies have identified factors such as personality traits, cognitive, family, socio-economic status, school environment and training programs that affect the performance of students.

Education must work towards developing higher order thinking skills (HOTS) commensurate with their levels. One important component of HOTS is critical thinking. Critical thinking is intellectual, active, skillful and disciplined process in which the thinker should conceptualise, analyse, synthesise and evaluate gathered information that are collected or generated based on observation, experience, reflection and reasoning as a guideline to direct belief and action in daily life issues. This type of thinking is

based on universal intellectual values such as clarity, accuracy, precision, consistency, relevance, sound evidence, good reasons, depth, breadth, and fairness (Defining Critical Thinking, 2013).

“Like reading and writing, critical thinking is important due to its applicability in so many areas of life and learning” (American Philosophical Association, 1990, as cited in Stupnisk, Renaud, Daniels, Haynes, and Perry, 2008, p. 524). The term critical thinking dates back to the Greek philosopher Socrates, as a special dialogue with the aim of using reasoning to examine opinions, because for him reflection on the quality of the belief and thinking was in the centre of thoughts (Ennis, 1987; Paul, 1993, as cited in Geng, 2014, p. 124). Based on 64 definitions of critical thinking, Geng (2014) concluded that the nature of critical thinking is composed of (i) taking judgment, (ii) argument, (iii) questioning, (iv) information processing, (v) problem solving, (vi) meta-cognition (vii) skills, and (viii) dispositions (p.127). Richard Paul debated about interrelationship between thinking and learning and argued to gain knowledge one must think and proper achievement is a result of its comprehension and its justification through critical thought (Andreou, Papastavrou, and Merkouris, 2014, p. 363).

Boghossian (2006) explained and analysed Socratic pedagogy based on critical thinking and broke down critical thinking according to APA’s Delphi Report. APA Delphi Report defined critical thinking as the judgment that is purposeful and self-regulatory. ‘This judgment then results in interpretation, analysis, evaluation, and inference of evidence, concepts, methods, criteria, and contexts’. In this definition experts conceptualised six central core elements of critical thinking skills:

- (i) *Interpretation*: comprehend and express meaning or significance
- (ii) *Analysis*: identify the intended and actual inferential relationships
- (iii) *Evaluation*: assess logical strength
- (iv) *Inference*: draw reasonable conclusions
- (v) *Explanation*: state the results and justify one’s reasoning
- (vi) *Self-regulation*: monitor one’s cognitive activities (p. 47).

According to the national panel of experts, who participated for two years in a Delphi Project (1990), “We understand critical thinking to be purposeful, self-regulatory judgment which results in interpretation, analysis, evaluation, and inference, as well as explanation of the evidential, conceptual, methodological,

criteriological, or contextual considerations upon which that judgment is based. CT is essential as a tool of inquiry. As such, CT is a liberating force in education and a powerful resource in one's personal and civic life. While not synonymous with good thinking, CT is a pervasive and self-rectifying human phenomenon. The ideal critical thinker is habitually inquisitive, well-informed, trustful of reason, open-minded, flexible, fair-minded in evaluation, honest in facing personal biases, prudent in making judgments, willing to reconsider, clear about issues, orderly in complex matters, diligent in seeking relevant information, reasonable in the selection of criteria, focused in inquiry, and persistent in seeking results which are as precise as the subject and the circumstances of inquiry permit. Thus, educating good critical thinkers means working toward this ideal. It combines developing CT skills with nurturing those dispositions which consistently yield useful insights and which are the basis of a rational and democratic society. The national Delphi project identified affective dispositions as well as skills abilities associated with the ideal critical thinker" (as cited in Facione, 1991, p. 4–5).

McGuire (1995, as cited in Boghossian, 2006, p. 43), to avoid faulty reasoning/thinking, emphasised on improving critical thinking and moral reasoning. Boghossian (2006) concluded that elements of Socratic pedagogy can be integrated structurally with curricula and the learning objectives of existing correctional educational programmes, and that correctional educators incorporate Socratic techniques to their daily lessons to foster critical thinking skills (p. 60).

In recent years more attention has been given to the role of personality factors. The question rises is, which one is more effective? In 1962, Lehmann designed a study to investigate relationship between critical thinking and some personality factors with scholastic performance in social science courses and found that critical thinking for both the males and females is better predictor of performance in social science courses.

Research indicated that critical thinking is composed of two main factors: critical thinking skills and disposition. Previous research on critical thinking has concentrated on critical thinking skills and excluded critical thinking disposition factors (Browne, Haas, and Keeley, 1978; Ennis, 1962, as cited in Taube, 1997, p. 129). Later research compounded dispositional factors into a two-factor model

to clarify which factor influences critical thinking performance. Assumption was that two-faced model is more plausible. Findings indicated that there is a strong correlation between ability and disposition and it is plausible that one is a cause of the other (Taube, 1997, p. 157). In conclusion, fostering critical thinking requires considering both ability and disposition. It is essential for educators, psychologists, and administrators to focus on two factors of critical thinking when attempting to promote an individual's critical thinking in educational systems where the major aim of education is to enhance academic performance (Taube, 1997).

Tiruneh, Verburch, and Elen (2014) highlighted that effective interventions promote students' critical thinking ability. According to Abrami et al. (2008), critical thinking as a fundamental aim of education has important link with the conception and organisation of educational activities. Atkinson (1997) emphasised that critical thinking is one of the most widely discussed concepts in today's education, educational reform and social practice (p. 71). Richard Paul believed that to gain knowledge one must have the ability to think critically. He asserted to achieve comprehensive and proper result; person should justify his/her thought logically (As cited in Andreou, Papastavrou, and Merkouris, 2014, p. 363). Holmes, Wieman, Carl, and Bonn (2015) claimed that critical thinking should be important goal of education and demonstrated that students with ability for acquisition of data and relating it to scientific methods showed much more sophisticated reasoning.

Wang, Pascarella, Laird, and Ribera (2015) conducted a study to determine substantial part of higher-order learning such as critical thinking and found that the impact of clear and organised instruction on growth in critical thinking skills significantly mediated students to have deep approaches to learning. Yang and Chang (2013) conducted a study to investigate the effect Digital game-based learning on students' critical thinking and academic achievement among seventh-grade students taking 67 students as their sample. The results of the study indicated that digital game programme improved critical thinking and academic achievement. Sarigoz (2012) found that critical thinking skills helped students to act logically and make decision accurately. Gharib, Rabieian, Salsali, Hadjizadeh, Kashani, and Khalkhali (2009) conducted another study about critical thinking skills and disposition among freshman and senior students of Health Care Management on a

sample of 60 students and found that the total scores of critical thinking were related to the students' positive tendency to apply critical thinking skills. It also indicated that there was no significant difference between the freshmen and senior students' score patterns. Ernst and Monroe (2004) examined high school students' critical thinking skills and disposition toward critical thinking on a sample of 404 students of 9th and 12th grades in Florida. Results indicated positive effect on critical thinking skills when controlling for GPA (Grade Point Average).

Facione (2000) argued that skill in critical thinking is positively correlated with the internal motivation to think and that specific critical thinking skills are related with specific critical thinking dispositions. Therefore, these assumptions suggest that a skill-focused curriculum would lead persons to be both willing and able to think. It also asserted that "effective teaching must include strategies for building intellectual character rather than relying exclusively on strengthening cognitive skills". Yeh and Wu (1992) investigated relationship between critical thinking and academic achievement among elementary, junior and senior high school students on a sample of 1022 students from selected grade levels and found positive and significant correlation between critical thinking and academic achievement.

The above review suggests that there is a need to develop critical thinking abilities and dispositions among school going students. Educational system needs to take proactive initiatives in this direction. It is also necessary that the school systems assess the present levels of critical thinking among learners and works towards developing them further. In the present study, researchers have attempted to answer the following two research questions.

Research Questions

1. Do students of secondary and senior secondary schools differ on critical thinking?
2. Does critical thinking affect the academic achievement of secondary and senior secondary schools students?

Objectives

In order to answer the above two research questions, the following two objectives are developed:

1. To study whether students of secondary and senior secondary schools differ significantly on critical thinking.

2. To study whether critical thinking affects academic achievement among students of secondary and senior secondary schools.

Hypotheses

1. There is no significant difference between the students of secondary and senior secondary school students on their critical thinking level.
2. Critical thinking does not affect academic achievement among secondary and senior secondary school students.

Method

The descriptive survey method was used in the study. The population of the study comprised secondary and senior secondary school students of Mysuru City, who were studying in english medium, in Government and Private High Schools and Pre University Colleges during academic year of 2015–2016. A total of 625 students from the above mentioned schools participated in the study. Further, the students enrolled in Classes 9th, 10th, 11th and 12th were selected for this study that were approximately of 14 to 18 years of age. The sampling frame developed is given in Table 1.

Table 1
Sampling Frame

| Mysuru City (9th, 10th 11th and 12th Standards) | | | |
|--|-----------------|-------------------------|-----------------|
| 625 Students | | | |
| Secondary | | Senior Secondary | |
| 375 | | 250 | |
| Government Schools | Private Schools | Government Schools | Private Schools |
| 50 | 325 | 100 | 150 |

In the study, Mysuru Critical Thinking Scale (MCTS) constructed by C.G. Venkatesha Murthy (2014) was used. The percentage of marks obtained by the students in the previous annual term examination was taken as academic achievement.

Results and Discussion

In order to test the first hypothesis chi square test was used to compare the performance of the students of secondary and senior secondary stages who are on different levels of critical thinking. In order to test the second hypothesis, one way ANOVA was used

to compare the academic achievement scores of students who are on different levels of critical thinking. The results of the study are discussed hypothesis wise as follows.

In order to test the first hypothesis, the secondary school students and senior school students who are on different levels of critical thinking were identified and tabulated (Table 2).

Table 2
Number of Secondary and Senior Secondary School Students on Different Levels of Critical Thinking

| Critical Thinking Levels | Secondary School Students | Senior Secondary School Students | Total |
|--------------------------|---------------------------|----------------------------------|--------------|
| Poor | 191 (50.93 %) | 132 (52.80%) | 323 (51.68%) |
| Average | 61 (16.27%) | 49 (19.60%) | 110 (17.60%) |
| High | 123 (32.80%) | 69 (27.60%) | 192 (30.72%) |
| Total | 375 (100%) | 250 (100%) | 625 (100%) |

Table 2 indicates that out of the 625 students, a majority of the sample was poor on critical thinking to the tune of 52 per cent, around 18 per cent are average critical thinkers and around 31 per cent are high critical thinkers. Since, the total number of students of secondary and senior secondary were different, in order to compare them, each of the three levels of learners were converted into percentages. A comparison of secondary and senior secondary students on their critical thinking levels indicated that a larger percentage of senior secondary students are poor as well as average critical thinkers, and a larger percentage of secondary school students were high on critical thinking ability. It means apparently, secondary school students are better than senior secondary school students on critical thinking abilities. In order to verify it statistically, it was subjected to chi square, which yielded the following.

Table 3 indicates that there was no significant difference between the students of secondary and senior secondary schools who are on different levels of critical thinking. It means, whatever variations that was seen in the levels of critical thinkers among secondary and senior secondary was only a matter of chance and that apparent difference is not statistically significant. Therefore, they were more or less the same on their critical thinking levels. So, whether one is at secondary stage or senior secondary stage they will not differ on their critical thinking abilities.

Table 3
Chi-Square Test Results of Comparison of Secondary and Senior Secondary Level Students on Three Levels of Critical Thinking

| | Value | df | Asymp. Sig. (2-sided) |
|--------------------|-------|----|-----------------------|
| Pearson Chi-Square | 2.368 | 2 | 0.306 |
| N of Valid Cases | 625 | | |

In order to test the second hypothesis, the academic achievement scores of all the students who are on different levels of critical thinking were identified and tabulated (Table 4).

Table 4
Distribution of the Sample on Different Levels of Critical Thinking

| | Poor | Average | High | Total |
|------------|------|---------|------|-------|
| Frequency | 323 | 110 | 192 | 625 |
| Percentage | 51.7 | 17.6 | 30.7 | 100 |

Table 4 indicates that out of the entire sample of 625 students, 323 (51.7 per cent) students were poor on critical thinking, followed by 110 (17.6 per cent) as average and 192 students (30.7 per cent) were at high level on critical thinking. It means, in the entire group, almost less than one-third of the group of the sample were high on the critical thinking levels, while remaining were either on average level or poor level on critical thinking. Further, there was a huge percentage to the tune of almost 52 per cent of the sample, who were poor on their critical thinking abilities. This situation should be the cause of concern. The academic achievement scores of different levels of critical thinkers were tabulated. Table 5 contains the results.

Table 5
Descriptive Statistics of Academic Achievement of Three Levels of Critical Thinkers

| Critical Thinking Levels | N | Mean | Std. Deviation | Std. Error | Min | Max |
|--------------------------|-----|-------|----------------|------------|-----|-----|
| Poor | 323 | 72.08 | 13.200 | 0.734 | 35 | 96 |
| Average | 110 | 75.31 | 14.153 | 1.349 | 40 | 97 |
| High | 192 | 81.38 | 12.035 | 0.869 | 38 | 98 |
| Total | 625 | 75.51 | 13.636 | 0.545 | 35 | 98 |

Table 5 indicates that the mean academic achievement scores of the sample increased as they moved from poor to high levels of critical thinking. Those students who were high critical thinkers were also high on academic achievement ($M=81.37$) and those who were poor in critical thinking were also low on their academic achievement ($M=72.08$). Further, it can be seen that the secondary and senior secondary students who were on different levels of critical thinking varied on their mean and SD. In order to study whether the above three groups of critical thinkers differ significantly on their academic achievement, the obtained scores were subjected to one way ANOVA (Table 6).

Table 6
One-way ANOVA of Academic Achievement
of Three Groups of Critical Thinkers

| Groups | Sum of Squares | df | Mean Square | F | Sig. |
|----------------|----------------|-----|-------------|--------|-------|
| Between Groups | 10417.533 | 2 | 5208.766 | 30.679 | 0.000 |
| Within Groups | 105604.284 | 622 | 169.782 | | |
| Total | 116021.817 | 624 | | | |

Table 6 indicates significant effect of critical thinking on academic achievement. Hence, the null hypothesis is rejected. It means the three groups of critical thinkers differed significantly on their academic achievement. Since, the obtained F ratio was significant, there is a need to see which of the three groups differ significantly. The results of the post hoc comparisons are presented in Table 7.

Table 7
Multiple Comparisons of Three Levels of Critical Thinkers
for Their Academic Achievement using Tukey's HSD

| (I) Critical Thinking Level | (J) Critical Thinking Level | Mean Difference (I-J) | Std. Error | Sig. |
|-----------------------------------|-----------------------------------|-----------------------------|------------|-------|
| Poor | Average | -3.228 | 1.438 | 0.065 |
| | High | -9.299 | 1.187 | 0.000 |
| Average | Poor | 3.228 | 1.438 | 0.065 |
| | High | -6.071 | 1.558 | 0.000 |
| High | Poor | 9.299 | 1.187 | 0.000 |
| | Average | 6.071 | 1.558 | 0.000 |

Table 7 shows significant differences between poor and high (Sig=0.00) and also between the average and high critical thinking groups on their academic achievement. While, there was no significant difference between poor and average groups on academic achievement. It means, the post hoc comparison clearly indicates that students who are high level of critical thinking differ significantly from the poor critical thinking group in favour of the former group as the mean score indicates. Further, the other two groups, average and high critical thinking groups are also found to differ significantly on their academic achievement in favour of the high critical thinking group as mean scores of the latter is higher than the former group. It means the higher levels of critical thinking affects their higher levels of academic achievement. Therefore, critical thinking is found to positively affect academic achievement among secondary and senior secondary school students.

The poor and the average critical thinking groups however have not differed significantly as their mean scores and mean difference on academic achievement are not too wide. It means, conceptually, in the present study, the poor and the average level critical thinkers are more or less same on their academic achievement. It means, in the present study the poor and the average critical thinking groups are not two different groups when it comes to their academic achievement.

The above finding appears to have a large consensus among researchers implying that critical thinking is an important variable to be focused as a part of education process which can positively influence academic achievement among learners. Therefore, it is an important variable to be focused as a part of education process.

Conclusions and Implications

The results of this study demonstrate that critical thinking ability is related to academic achievement among secondary and senior secondary students and the students with high critical thinking will have high academic achievement. It is therefore necessary that educational process fosters critical thinking abilities among learners. There are different studies which have found and shown that critical thinking can be developed among learners in school situations. Emir, (2013) has found that teachers' critical thinking disposition and thinking styles of students are significantly related. Florea and Hurjui (2015) have identified static and dynamic contexts as useful developing critical thinking among elementary school

students. Marin, L. M., and Halpern, D. F. (2011), in their *Pedagogy for developing critical thinking in adolescents*, conducted two studies and compared explicit and imbedded instructional modes and found that the students receiving explicit instruction showed much larger gains than those in the imbedded instruction group. These results provide robust evidence that explicit instruction is an effective method for teaching critical thinking skills to high school students. McMahan, G. (2009) examined the relationship between students working in a technology-rich environment and their development of higher order thinking skills. The research suggests that to develop students' higher order thinking skills, schools should integrate technology across all of the learning areas. This will allow students to apply technology to the attainment of higher levels of cognition within specific contexts. Miri, David, and Uri (2007) conducted a longitudinal case-study aimed at examining whether purposely teaching for the promotion of higher order thinking skills enhances students' critical thinking (CT), and found that the experimental group showed a statistically significant improvement on critical thinking skills components and disposition towards critical thinking subscales, such as truth-seeking, open-thinking, self-confidence, and maturity, compared with the control groups. Our findings suggest that if teachers purposely and persistently practice higher order thinking strategies for example, dealing in class with real-world problems, encouraging open-ended class discussions, and fostering inquiry-oriented experiments, there is a good chance for a consequent development of critical thinking capabilities.

Further, it was also found that secondary and senior secondary students are alike on their critical thinking levels. Together, it implies that it is important to make our learners critical thinkers as they can exceed in education. This is an important correlate of academic achievement. Therefore, enough attention is to be given to this variable by teachers as a part of educational process.

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Perceptions of In-Charge Teachers of Mid-Day Meal Scheme in India (Case Study of UT Chandigarh)

SEEPANA PRAKASAM*

ABSTRACT

This paper is based on a field study conducted on 50 Mid-Day Meal Scheme in-charge teachers in 50 government schools across the Union Territory of Chandigarh. The objectives of the study were to understand the consumption pattern of the cooked Mid-Day Meal by the school going children under Mid-Day Meal Scheme. The majority of the respondent teachers felt that the quality of mid-day meal is average, and it has positive impact in terms of increase in enrolment and attendance but indifferent about increase in attention towards studies. Some of the children do not take food due to reasons like lack of parent's permission, food not tasty, repetition of the same food, distribution of food much earlier than lunch time. There was no unanimity among the teachers, whether the implementation of Mid-Day Meal was satisfactory or not by the Chandigarh administration. The in-charge teachers stated that Chandigarh administration spends reasonably large amount of money as subsidy, but it is not sufficient if quality of food and service delivery is not improved. Involvement of parents is necessary in setting up menu. There is a need to reduce infrastructural bottlenecks and, instead of distribution of food from the centralised kitchens, it is better to decentralise kitchens for better supervision. There is also a need to enhance nutritional standards of the meal.

Introduction

This paper aimed to know the perceptions of in-charge teachers of the Mid-Day Meal Scheme (MDMS) with regard to the issues concerning consumption pattern of the cooked mid-day meal by the school children. Healthy children are better able than sick or malnourished to go to school and learn (World Bank, 2014). The

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decision to send a child to school, like other household investment decisions, can be made by cost-benefit framework (Dreze and Kingdon, 2001). Most of the children from low socio-economic background suffer from under nutrition, more often they dropout from schools at an early age, which shows direct impact on their personality development and indirectly affects human capital formation of the nation. Poor enrolment and higher school dropout rate are attributed to the poor nutritional status of the children compounded by poor socio-economic conditions, child labour and lack of motivation (Ayeni and Adelabu, 2012).

The roots of mid-day meal programme can be traced back to the pre-independence era. It was for the first time introduced in 1925 in Madras Corporation by the British administration. The Government of India initiated the National Programme of Nutritional Support to Primary Education (NP-NSPE) as centrally sponsored scheme on 15 August 1995. Due to extension of this scheme to upper primary school children in 2007, it is called as National Programme of Mid-Day Meals in Schools. MDMS serves hot cooked mid-day meal (lunch) on working days to the school children across Classes I–VIII in government-aided schools, Special Training Centers (STC) and *Madrasas* and *Maktabs* supported under the *Sarva Shiksha Abhiyan*. Next to public distribution system, cooked mid-day meal scheme is the second largest food security programme in India. Therefore, it is covered by the National Food Security Act (NFSA) 2013.

The scheme aimed to achieve the objectives of enhancing enrolment, retention, attendance and simultaneously improving nutritional levels among children. MDMS not only encourage enrolment by lowering cost of schooling by providing an implicit subsidy to the parents, but also improve child nutrition and learning. Moreover mid-day meals have an important social value of promoting equality. As children learn to sit together and share a common meal, one can expect some erosion of caste prejudices and class inequality (Government of India, 2006). Studies indicate that there is positive relationship between nutritional status and educational development. Right to life under Article 21 of the Indian Constitution supports children right to food. Central and state governments do share financial liability for the implementation of the scheme. The coverage of the scheme among number of schools and number of beneficiaries has increased considerably.

In addition to the cost of food grains, MDMS involves two other major inputs, namely; cost of cooking and provision of essential infrastructure. Cooking cost per child is not static; it is revised by the government in accordance with price index. Cooking cost will be borne by the Central and State Governments/North Eastern States/UTs in different proportions (Centre and the North Eastern states on 90:10 bases and with other States/UTs on 75:25 bases). Cooking cost for upper primary classes is kept higher than primary classes due to the requirement of larger quantities for the former.

The nutritional content in mid-day meal is to supplement 480 calories worth of food for children studying in primary classes and 720 calories worth of food for upper primary classes. The daily protein supplementation is 12 grams and 20 grams for primary and upper primary classes, respectively. The daily requirement of food items for primary classes are — food grains rice/wheat 100 grams, pulses 20 grams, vegetables 50 grams, oil and fat 5 grams, salt and condiments as per requirement, whereas for upper primary classes food grains rice/wheat 150 grams, pulses 30 grams, vegetables 75 grams, oil and fat 7.5 grams, salt and condiments as per requirement (Government of India, 2015).

The Problem, Objectives and Methodology of Research

The Problem

The school dropout rate, wastage and stagnation are still high among children from low income groups. They suffer from anaemia and mal-nutrition due to non availability of adequate quantity of nutritious food. Thus, making available tasty and nutritious food to the school children is a matter of great concern.

Objectives

The objectives of the study included the followings:

- (i) To study the consumption pattern of cooked mid-day meal by the school going children.
- (ii) To study the opinion of mid-day meal in-charge teachers on implementation of the scheme particularly with regard to providing cooked mid-day meal by the government.
- (iii) To suggest policy measures for better implementation of mid-day meal scheme.

Data Sources

Primary data were collected using structured questionnaire by conducting personal interview at the place of work (schools).

Sampling Method

Clustered Simple Random Sampling method was used.

Sample Size

Fifty mid-day meal in-charge teachers both males and females were selected as respondents from 50 government model (english medium); non-model (hindi medium) primary, secondary and senior secondary schools across the city of Chandigarh (three administrative regions) for the study. Out of the 50 schools, 45 schools were getting MDM from centralised kitchens (hotels), while the remaining 5 schools had kitchens in the school itself.

Selection of the Study Area

Chandigarh city was selected for the study, because it occupies third rank in per capita income among the Indian cities and, thus, attracts large number of migrant poor people from different parts of India. Children of poor people generally study in government schools, hence it is felt important to know the perceptions of mid-day meal in-charge teachers for better implementation of MDMS to enhance learning abilities of the children.

Reference Period

The field survey is carried out during 2015.

Results and Discussion

The Beneficiary Children

Among the eligible (studying Class I–VII), about 64.26 per cent of the children studying in non-model (hindi medium) schools and about 57.22 per cent children studying in model (english medium) schools were the consumers of mid-day meals. Children studying in model schools are economically better than those studying in non-model schools. This may be the reason for this gap. On the whole, about 60.60 per cent children were the consumers of mid-day meal, an index of under utilisation.

Supply Source and Quality of Food

Among 50 sample schools, the highest majority of the schools (N=45, 90 per cent) were getting food from three centralised kitchens (hotels) located in Chandigarh, while the remaining five (10 per cent) of the schools had their own kitchens in their respective schools. Keeping in view the experience of getting food from centralised kitchens (hotels being managed by government), based on punctuality, maintenance of hygiene, quality and quantity of food supplied, teachers assigned ranks to the three hotels. A large majority of the MDM in-charge teachers (84.44 per cent) assigned first rank to Chandigarh Institute of Hotel Management, Sector 42, about (84.44 per cent) teachers assigned second rank to Ambedkar Institute of Hotel Management, Sector 42, while (86.66 per cent) teachers assigned third rank to Shivalik Hotel Sector 17. Teachers stated a number of reasons for assigning rank 3 to Shivalik Hotel. The large majority (51.11 per cent) of the teachers stated poor quality is the main reason, about (17.77 per cent) teachers stated three reasons, i.e., poor quality, lesser quantity, less hygienic, and about (15.55 per cent) teachers stated food either over cooked / under cooked, while the remaining teachers expressed more than one reason as said above.

Impact of MDMS on Enrolment, Attendance and Attention Towards Studies

Majority of the teachers perceived positive impact of MDM on increase in enrolment and attendance. Table 1 indicates that 22 teachers said that MDM is the reason for increase in enrolment, 34 teachers opined that MDM has made positive impact on increase in attendance, and 14 teachers stated that MDM is the reason for increase in attention towards studies.

Table 1
Impact of MDM on Enrolment, Attendance and Attention towards Studies

| Impact Status (1) | Number of MDM In-charge Teachers (Number of Sample Schools) (2) | Due to MDM (3) | Cannot say due to MDM (4) | Indifferent (5) | Total (3+4+5) |
|----------------------|---|-------------------|------------------------------|--------------------|------------------|
| | Enrolment Increased? | | | | |
| Yes | 40 | 22 | 18 | 0 | 40 |

| | | | | | |
|---|----|----|----|---|----|
| No | 10 | NA | NA | 0 | |
| Attendance Increased? | | | | | |
| Yes | 48 | 34 | 14 | 0 | 48 |
| No | 2 | NA | NA | 0 | |
| Attention towards Studies Increased? | | | | | |
| Yes | 39 | 14 | 23 | 2 | 39 |
| No | 11 | NA | NA | 0 | |

Perception about Consumption and Quality of MDM

The in-charge teachers assigned different reasons for certain proportion of the entitled school going children not taking mid-day meal. It is clear from Table 2 that the larger majority (36 per cent) of the teachers stated three reasons, namely, lack of parents' permission, food not tasty, repetition of the same type of menu, while 26 per cent of the teachers expressed only one reason, i.e., repetition of the same food. Teachers stated different reasons for students' not taking MDM. About 26 per cent of teachers revealed that those who attended school take meal, and about 12 per cent teachers said that children bring food from their homes, children prefer to buy food which is available in the school premises and in the market, food distribution too early, i.e., much before than lunch time.

Table 2
Reasons for Entitled Children Not Consuming MDM

| Reasons | Number of MDM In-charge Teachers (Number of Sample Schools) | Percentage |
|---|--|-------------------|
| Lack of parents permission, food not tasty, repetition of the same food | 18 | 36% |
| Repetition of the same food | 13 | 26% |
| Those who attended school, avail meal | 13 | 26% |

| | | |
|---|-----------|-------------|
| Bring food from home | 4 | 8% |
| Preference of food other than being supplied through mdms | 1 | 2% |
| Food distribution too early i.E., Earlier than lunch time | 1 | 2% |
| Total | 50 | 100% |

As regards the level of satisfaction on consumption of MDM, about 34 per cent of the teachers said that they were satisfied with the way in which Chandigarh administration implementing MDMS. In contrast, about 34 per cent teachers said that the need of improvement of quality and quantity (not satisfied), and about 24 per cent teachers opined that there is a need to change the menu (not satisfied). Based on the above information it can be concluded that, the major proportion of the teachers were not satisfied. It were only in-charge teachers of school based kitchens (8 per cent) who expressed full satisfaction (Table 3).

Table 3
Level of Satisfaction about the Status of Implementation of MDM in Chandigarh

| Opinion | Number of MDM In-Charge Teachers (Number of Sample Schools) | Percentage |
|--|--|-------------|
| Satisfied | 17 | 34% |
| Need improvement of quality and quantity (not satisfied) | 17 | 34% |
| Change menu (not satisfied) | 12 | 24% |
| Fully satisfied | 4 | 8% |
| Total | 50 | 100% |

Source: Field Survey Data

(e) Reasons for Wastage and Non-Consumption of food by the Children

Table 4 reflects that the larger proportion (66 per cent) of the teachers said that children don't waste food. However, all the teachers were not unanimous with regard to the reasons for wastage of food. While 16 per cent revealed no taste, 6 per cent teachers stated that they don't allow children to waste, 4 per cent said food not well cooked, and 4 per cent of the teachers expressed thin consistency of pulses (more water content).

Table 4
Reasons for Wastage of MDM by the Children
from their Respective Share

| Reasons | Number of MDM In-charge Teachers (Number of Sample Schools) | Percentage |
|--|--|-------------|
| Don't waste | 33 | 66% |
| No taste | 8 | 16% |
| Don't allow to waste | 3 | 6% |
| Don't like | 2 | 4% |
| Not well cooked | 2 | 4% |
| Thin consistency of pulses (more water content) | 2 | 4% |
| Total | 50 | 100% |

Table 5 shows that majority (34 per cent) of the teachers stated that children were not interested to eat MDM due to no-taste, 26 per cent said children don't like menu, 10 per cent stated repetition of pulses, and only 10 per cent teachers said that they like the whole menu. Thin consistency of pulses (more water content), no variety, no vegetables in pulses, not appealing for students, not a good combination of menu, repetition of pulses, eat similar food at home were the other reasons.

Table 5
Reasons for No Interest to Consume MDM

| Menu Not Interested | Number of MDM In-charge Teachers (Number of Sample Schools) | Percentage |
|-------------------------------------|--|-------------|
| Don't like | 13 | 26% |
| No taste | 17 | 34% |
| Repetition of pulses | 5 | 10% |
| Whole menu is good | 5 | 10% |
| Not properly cooked | 3 | 6% |
| Thin consistency of pulses | 2 | 4% |
| No vegetables in pulses | 1 | 2% |
| Not appealing for students | 1 | 2% |
| Not good combination of menu | 1 | 2% |
| Not stated any reason | 1 | 2% |
| Same food available at home also | 1 | 2% |
| Total | 50 | 100% |

Conclusion

The analysis shows that a large majority of the children studying in non-model (Hindi medium) schools availed MDM than the children studying in model schools. The teachers perceived that MDMS has positive impact on enrolment, attendance and retention. Low quality of food, and improper cooking are the reasons for not consuming meals by all the entitled children. Majority of the teachers said that there is a need of improvement in quality and quantity of MDM. Mere implementation of Mid-Day Meal Scheme will not give fruitful results, unless timely necessary measures are initiated to bridge the existing drawbacks. Food menu should be maintained in accordance with the interests of children without compromising nutritional values. Food should be prepared in the school itself for better supervision and serve it fresh, which will attract large number of children. Parents' views should be taken into consideration while fixing menu and timings of the food. Licence should be given to food supplying hotels on year to year basis based on their performance. Education department should take timely feedback from the children, in-charge teachers and principals about the implementation of Mid-day Meal Scheme and take effective measures for further improvement.

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Academic Administration in Indian Universities: A Study of Occupational Efficacy, Managerial Aptitude and Organisational Commitment of Effective and Ineffective University Administrators

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ABSTRACT

The present study was conducted to find out the occupational efficacy, managerial aptitude and organisational commitment of educational administrators working in Indian Universities. The descriptive method of research was adopted to carry out the study. A sample of 260 educational administrators was selected from the existing Universities of Jammu and Kashmir State. The Occupational Self Efficacy Scale (OSES) standardised by Pethe, Chowdari and Dhar (1999), Managerial Aptitude Scale (MAS) developed by Dhar, Dhar and Sharma (2011), and Organisational Commitment Scale (OCS) developed by Hyde and Roy (2011) were administered. The results revealed a significant positive correlation between occupational efficacy, managerial aptitude and organisational commitment of educational administrators in higher education. Besides, the results revealed a significant difference on all dimensions of managerial aptitude and organisational commitment of effective and ineffective educational administrators.

Keywords: *Occupational Efficacy, Managerial Aptitude, Organisational Commitment, Educational Administrators, Indian Universities.*

Introduction

The head of an institution is the most significant person in the university enterprise (Waters et al., 2003). The place of the

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departmental head in higher education is one that requires leadership, administrative skills and scholarship (Gabbidon, 2005; Lucas, 2000) and bridges the gap between faculty and administration. According to Bennett (1983), it is at the departmental level that the real institutional business gets conducted... it is here that teachers and learners can make contact, that researchers find encouragement and direction, and that many of the ways to contribute to the larger community are identified and explored (p. 1). The individuals who lead the academic departments are considered the 'front-line leaders' in higher education (Gmelch, 2000). The fate of an institution in a large measure depends upon the type of man who is heading the institution. Good institutions, for that matter, are named after their Principals, Heads or Deans.

Theoretical Framework

The present research is grounded in three bodies of theory and research, i.e., occupational self efficacy, managerial aptitude and organisational commitment. In order to explain how self-efficacy affects managerial aptitude and organisational commitment, the self-efficacy theory advocated by Bandura was used. According to Bandura, self-efficacy is the measure of one's own ability to complete tasks and reach goals. Bandura postulated four sources of efficacy beliefs: mastery experiences, physiological and emotional states, vicarious experiences and social persuasion (Bandura 1986). Bandura (2000) promoted the importance of self-efficacy in leadership situations by stating, "When faced with obstacles or setbacks... those with a strong belief in their capabilities will redouble their efforts to master the challenge" (p.120). Self-efficacy is vital to leaders' success, because it determines the degree of effort exerted on a particular task as well as the kinds of aspirations and goals that leaders set (Bandura, 1986; Gist & Mitchell, 1992). Similarly, regarding the variable, 'Managerial Aptitude' the theory of Katz provided the theoretical base to study the managerial aptitude of educational administrators at higher education level. In 1955, Harvard Business Review published a study by Katz (1955) entitled Skills of an Effective Administrator. Katz argued that what an administrator accomplishes is based on the skills that he possesses and these include technical human and conceptual skills. Technical skill is defined as the understanding of or proficiency in specific activities that require the use of special tools, methods, processes, procedure and is thought of as the

specific skills an individual needs to perform some specialised task (Katz, 1955). Human skills are defined as the ability to work cooperatively with others, to communicate effectively, to resolve conflict (Katz, 1955). Finally, conceptual skill is defined as the ability to see the organisation as a whole or to have a systematic viewpoint (Mintzberg, 1973). Regarding the theory of organisational commitment, the tri-dimensional model given by Meyer and Allen (1997, p 106) was used to conceptualise organisational commitment in three dimensions, namely affective, continuance and normative commitments. These dimensions describe the different ways of organisational commitment development and the implications for administrators' behaviour.

Rationale of the Study

The effectiveness of education depends largely upon the effectiveness of educational administrators. That is why *National Policy on Education* (1986) advocated for paying special attention to the training of educational planners, administrators and heads of the institutions. Research has shown that the educational administrators who received short term orientation courses in management education displayed productive occupational efficacy, effective administrative behaviour, appropriate managerial aptitude, high degree of organisational commitment and are highly satisfied with their job. Rao and Sridhar (1997) in a trend report on Organisation, Administration and Management of Education writes, "There is an urgent need to conduct a series of research studies on management styles in higher education (universities and colleges)". In the light of this research gap, the present study was undertaken.

Objectives of the Study

The study was conducted with the following objectives:

- (i) To study the occupational efficacy, managerial aptitude and organisational commitment of educational administrators working in the Universities located in the state of Jammu and Kashmir.
- (ii) To compare the effective and ineffective educational administrators working in the Universities located in Jammu and Kashmir on managerial aptitude and organisational commitment.

Hypotheses

- (i) Occupational efficacy is significantly related to managerial aptitude and organisational commitment of educational administrators.
- (ii) Managerial aptitude is significantly related to organisational commitment of educational administrators.
- (iii) Effective and ineffective educational administrators working differ significantly on managerial aptitude and organisational commitment.

Method

The present investigation was carried out to evaluate the occupational efficacy, managerial aptitude and organisational commitment of educational administrators working in the Universities of Jammu and Kashmir. The descriptive method of research was adopted to carry out the study. The details about the sample, the tools and their description and the statistical method used for data analysis for the present study are given as under.

Sample

The sample for the present investigation consisted of 260 Educational Administrators selected from the existing Universities of Jammu and Kashmir. The sample subjects comprised of Registrars, Dean Academic Affairs, Deans of various Faculties, Heads of various Departments and Directors of various centers/institutes. Among the sample subjects, 216 were male and 44 were female educational administrators. However, it needs to be mentioned here that out of total sample, 174 were senior and 86 were junior educational administrators.

Research Tools

In the present study, the following standardised tools were administered:

- (i) Occupational Self Efficacy Scale (OSES) standardised by Pethe, Chowdari and Dhar (1999) was administered. The scale consists of nineteen items in the areas of Confidence, Command, Adaptability, Personal Effectiveness, Positive Attitude and individuality.
- (ii) Managerial Aptitude Scale (MAS) designed by Dhar, Dhar and Sharma (2011) was selected to measure the Managerial

Aptitude of Educational Administrators. The scale consists of 74 items with 27 attributes, 11 factors and five dimensions i.e., ability to plan, ability to lead, ability to control, ability to motivate and ability to manage change.

- (iii) Organisational Commitment Scale (OCS) developed by Hyde and Roy (2011) was administered. This scale consists of 30 items related to eight factors leading to a total of four dimensions i.e., belongingness, job satisfaction, optimism and quality of work life.

Procedure of Data Collection

The investigator, before the actual conduct of the study, contacted the sample subjects with a view to establish a rapport with them, so that they offer the needed cooperation for the conduct of the study. This was thought to be necessary, because without their active cooperation, neither the administration of the questionnaires under proper conditions, nor the willingness of the administrators could have been procured. As such the data was collected by the investigator from the sample subjects with the help of the standardised questionnaires.

Results

Occupational Efficacy, Managerial Aptitude and Organisational Commitment of Educational Administrators

Table 1 shows that about half of the educational administrators were average on occupational efficacy, followed by about 40 per cent above average and a small number was below average.

Table 1
Occupational Efficacy of Educational Administrators

| Scores Obtained on OSE Scale | N | Percentage | Status of Efficacy |
|-------------------------------------|----------|-------------------|---------------------------|
| 83 and above | 108 | 41.54 | Above Average |
| 65-82 | 128 | 49.23 | Average |
| Below 64 | 24 | 9.23 | Below Average |

About 41 per cent educational administrators were either average or above average on managerial aptitude. Almost similar number possessed high or very high aptitude. The percentage of educational administrators possessing low or very low aptitude was relatively small (Table 2).

Table 2
Managerial Aptitude of Educational Administrators

| Scores Obtained on MA Scale | N | Percentage | Aptitude Status |
|-----------------------------|----|------------|-----------------|
| 329 and above | 35 | 13.46 | Very high |
| 313–328 | 80 | 30.76 | High |
| 297–312 | 66 | 25.38 | Above average |
| 276–296 | 41 | 15.76 | Average |
| 260–275 | 16 | 6.15 | Below average |
| 244–259 | 14 | 5.38 | Low |
| 243 and below | 08 | 3.07 | Very low |

Table 3 contains scores on organisational commitment. About 43 per cent were average, 41 per cent were high, and about 15 per cent low on organisational commitment.

Table 3
Organisational Commitment of Educational Administrators

| Scores Obtained on OC Scale | N | Percentage | Level of Commitment |
|-----------------------------|----|------------|---------------------|
| 122 and above | 31 | 11.92 | Extremely high |
| 113 – 121 | 77 | 29.61 | High |
| 104 – 112 | 68 | 26.15 | Above average |
| 92 – 103 | 43 | 16.53 | Average |
| 83 – 91 | 17 | 6.53 | Below average |
| 74 – 82 | 15 | 5.76 | Low |
| 73 and less | 09 | 3.46 | Extremely low |

Correlational Analysis

Table 4 contains the results of Pearson Product Moment Correlations between three variables, namely occupational efficacy, managerial aptitude and organisational commitment. All the three variables are significantly correlated with each-other.

Table 4
Coefficient of Correlations between Occupational Efficacy, Managerial Aptitude and Organisational Commitment

| Variable | Occupational Efficacy | Managerial Aptitude | Organisational Commitment |
|-----------------------|-----------------------|---------------------|---------------------------|
| Occupational efficacy | - | 0.54** | 0.61** |
| Managerial aptitude | - | - | 0.54** |

$P < .01$

Comparison of Effective and Ineffective Educational Administrators on Managerial Aptitude and Organisational Commitment

The effective and ineffective educational administrators were identified on the basis of criterion of occupational efficacy measured with the help of Occupational Self Efficacy Scale. The high and low groups were drawn by employing extreme group technique of 27 per cent above and below. As such the above 27 per cent (N=70) educational administrators possessing high score were considered effective and low 27 per cent (N=70) as ineffective. This was followed by a comparative evaluation of effective and ineffective educational administrators on various components of managerial profile (administrative behaviour, managerial aptitude, organisational commitment and job satisfaction). Table 5 contains the results.

Table 5
Comparison between Effective and Ineffective Educational Administrators on Various Dimensions of Managerial Aptitude

| Dimensions | Group | Mean | S.D | t-value |
|--------------------------|-------------|--------|-------|---------|
| Ability to plan | Effective | 109.14 | 8.95 | 7.23** |
| | Ineffective | 98.86 | 7.91 | |
| Ability to lead | Effective | 81.56 | 7.89 | 6.78** |
| | Ineffective | 73.22 | 6.78 | |
| Ability to control | Effective | 66.12 | 7.67 | 6.71** |
| | Ineffective | 57.93 | 6.79 | |
| Ability to motivate | Effective | 46.19 | 6.88 | 9.41** |
| | Ineffective | 35.83 | 6.31 | |
| Ability to manage change | Effective | 17.12 | 4.69 | 4.72** |
| | Ineffective | 13.81 | 3.72 | |
| Overall dimensions | Effective | 320.13 | 26.67 | 9.82** |
| | Ineffective | 279.65 | 21.86 | |

** $P < 0.01$

Table 6 shows that the effective educational administrators exhibited better managerial ability than their counterparts. The effective educational administrators have been found to be more effective in planning, advanced in leading and superior in controlling. In the light of these results, the hypothesis that Effective and Ineffective Educational Administrators working in the Universities of Jammu and Kashmir differ significantly on Managerial Aptitude stands accepted.

Table 6
Comparison between Effective and
Ineffective Educational Administrators on
Various Dimensions of Organisational Commitment

| Dimensions | Group | Mean | S.D | t-value |
|----------------------|-------------|--------|-------|---------|
| Belongingness | Effective | 52.18 | 7.62 | 8.37** |
| | Ineffective | 43.81 | 6.79 | |
| Job satisfaction | Effective | 24.12 | 5.36 | 8.91** |
| | Ineffective | 16.72 | 4.56 | |
| Optimism | Effective | 4.09 | 1.72 | 7.23** |
| | Ineffective | 2.86 | 0.92 | |
| Quality of work life | Effective | 48.22 | 6.43 | 8.35** |
| | Ineffective | 39.61 | 5.89 | |
| Overall | Effective | 128.64 | 18.79 | 10.32** |
| | Ineffective | 102.93 | 15.76 | |

** $P < 0.01$

The effective educational administrators have been found to exhibit more affection, high belongingness and are more empathetic towards their organisation. They show contentment, goal fulfillment and seem to be highly satisfied with their jobs. They seem to be optimistic and believe in efficient work culture than the ineffective educational administrators. In the light of these empirical evidences, the hypothesis number fifth which reads, "Effective and Ineffective Educational Administrators working in the universities of Jammu and Kashmir State differ significantly on Organisational Commitment" stands accepted.

Discussion

The study shows a significant positive relationship between occupational efficacy and managerial aptitude of educational administrators. This indicates that educational administrators who exhibit better confidence level to work independently are able to choose best among various available alternatives. This suggests that more the occupational efficacy, higher shall be the rating of managerial aptitude of educational administrators. The data further depicts that there is positive relationship between occupational efficacy and organisational commitment of educational administrators. Further, a significant positive correlation between

Managerial Aptitude and Organisational Commitment was reported in the study. This confirms that higher the score of managerial aptitude, more will be the rating of organisational commitment.

While comparing effective and ineffective educational administrators on various dimensions of managerial aptitude, it was observed that effective educational administrators showed better managerial ability than ineffective educational administrators. Their decisions are based on sufficient facts and proper analysis. They are proactive and are able to translate decisions into action. It was observed that effective educational administrators tend to have more belongingness, high affection and extra contentment towards their organisation than their counterparts. This implies that effective educational administrators show contentment and goal-fulfillment towards their organisation. They are objective in their approach and do not mix their feelings, emotions and personal problems in their professional work. Their thinking styles are governed and dominated by positive thoughts.

Educational Implications

Findings of the present study reveal some important educational implications. Majority of the administrators come from the teaching cadre and they have a little experience in administration, which affects their administrative effectiveness and efficacy. In this backdrop, it is suggested that they may be provided specific training before they are promoted to the job of administrator. It was found in the study that majority of the educational administrators have been found to exhibit average occupational efficacy. Therefore, suitability should be judged before promoting the administrators to the higher posts. Short term/long term training in field of management, planning and finance should be introduced for the professional growth of junior and female educational administrators. Effective educational administrators exhibited better managerial abilities than ineffective counterparts. Thus, efforts should be taken to initiate various training programmes such as professional conferences/seminars, professional training programs and an advanced degree in higher education so that the managerial abilities of the educational administrators can be brought to the effective level. Considerable emphasis should be given to value addition, effective resource allocation on a priority basis and team work. Significant differences have been reported between effective and ineffective educational administrators on

organisational commitment. In the light of these results, optimal provision of intrinsic and extrinsic job rewards should be arranged for ineffective educational administrators so that they may become highly satisfied and more committed.

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Assessment of Social Science and Commerce Textbooks and Teaching Learning Processes

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The National Council of Educational Research and Training (NCERT) brought out model syllabi and textbooks for Class I – XII on the basis of National Curriculum Framework 2005 (NCF 2005). These curricular materials have been adopted or adapted and used in a considerable number of schools in India. The present study is an attempt to understand and assess the utility of Classes IX to XII Social Sciences (History, Geography, Political Science, Sociology and Economics) and Commerce syllabi and textbooks in classrooms. The emphasis is laid on teacher’s organisation of classroom practices— use of textbooks, pedagogical approaches, opportunities given to promote activity based learning, classroom assessment practices and student’s learning levels. It also attempted to understand perception of teachers and students about curricular materials and desirable curricular goals incorporated in curricular materials. To elaborate, this study attempted to examine whether the use of syllabi and textbooks has resulted in the shift from teacher-centred to student-centred classroom practices, changes in assessment practices and student’s learning levels in social sciences and commerce subjects and reduction in stress among students and teachers. In addition to these, the study also attempted to find answer to the questions such as whether students were able to connect the social sciences and commerce curricular

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contents with their immediate environment and what was the extent of teachers understanding of national curricular concerns?

Forty-eight government and private-aided schools affiliated to three Boards viz., Central Board of Secondary Education (five schools), Haryana (19 schools) and Uttarakhand Secondary and Higher Secondary Examination Board (24 schools) participated in the study. These schools are run by the state education departments of Uttarakhand (16 schools), Haryana (17 schools), private educational trusts and funded by State Governments (2 in Haryana and 8 in Uttarakhand), *Navodaya Vidyalaya Samiti* (NVS, 2 in Haryana and 1 in Uttarakhand) and *Kendriya Vidyalaya Samiti* (1 KVS each in Haryana and Uttarakhand).

The schools included in the study followed NCERT syllabus and were prescribed to use NCERT textbooks. As many as 200 teachers teaching social sciences for Classes IX to X, sociology and commerce for Classes XI and XII and 2500 students studying in Classes IX to XII in these schools participated in the study. Nine tools consisting of questionnaires, classroom observation schedules, focus group discussion schedule for students and teachers, achievement tests, school profile and checklist and field notes were used to collect qualitative and quantitative data from students, teachers and schools. Mixed methods approach and triangulation were followed to analyse the data.

The key findings and observations of the present study briefly describes about; (i) the use of NCERT syllabus and textbooks, (ii) perception of students and teachers on syllabus and textbooks (iii) nature of social sciences and commerce classrooms, (iv) connecting school curriculum with local environment and daily lives, (v) understanding of national curricular concerns, (vi) changes in assessment practices, (vii) students' learning levels, (viii) curricular overburden and stress. In Haryana, teachers used NCERT textbooks in 17 out of 30 classrooms. In Uttarakhand, 22 out of 29 teachers used NCERT textbooks. NCERT textbooks were used by teachers particularly for Classes IX to X. In Classes XI and XII, mostly private publishers' textbooks were used. The access to and use of textbooks in schools is driven by examination system. The research team observed that NCERT textbooks were not widely used in many schools and particularly in Haryana.

The content presentation in NCERT textbooks received only a satisfactory level appreciation by teachers in the study schools. Social Sciences and commerce teachers reported that language,

presentation and the quality of narratives in NCERT textbooks was of 'high standard' and was meant for urban students. According to them, students studying in rural schools were not able to connect the content with their local environment. Language and subject-specific terminologies used in NCERT's hindi-version textbooks were major sources of discomfort for both students and teachers. Many terms used in textbooks were not used in common parlance. Not only the number of topics was more in Social Sciences courses for Classes IX and X, particularly for, but also some chapters of these Social Sciences textbooks chapters were found lengthy. However, students appreciated the visuals and general layout of NCERT textbooks. Both students and teachers appreciated the variety of questions given in the textbooks. Though both students and teachers appreciated activities given in textbooks, but most activities suggested in textbooks were not conducted in schools. Teachers reported not having enough time to conduct activities given in the textbooks. According to teachers, maps were insufficient for teaching history and geography. Teachers expected that data and information given in textbooks should be update. As fact-based questions are asked in examinations, students are required to supply answers with latest information. The pedagogical reasons for the use of subject-specific textbooks introduced in these classes by the NCERT and suggested in the curriculum framework documents were not understood by teachers. Teachers found difficult to see the linkages between subject objectives and how they were incorporated in different textbooks. Teacher's understanding of what is happening in the knowledge domains of different social sciences and commerce within and outside India was limited due to which they did not understand why topics and themes given in the textbooks are organised and presented differently. Mostly teachers thought in terms of subject boundaries. Inter-disciplinary approaches followed in some topics were not appreciated by them. Limited understanding of changes in social sciences and commerce syllabus and textbooks and their philosophical underpinnings as suggested in NCF 2005 (for example, constructivism as a way of organising teaching-learning process) was true even for KV and JNV teachers who worked closely with NCERT relatively for longer period and underwent training within their system and in NCERT. The perception of gap about various themes was wide and significant in Haryana than in Uttarakhand. For example, teachers felt that there was no need to teach sustainable development and people's

movements in the geography textbooks. Social sciences teachers also considered that it was not their job to teach history of culture, literature and language included in the NCERT history textbooks. Rather, they felt that more contents related to Indian history could be included in the syllabus. Social sciences teachers could not recognise that Indian history is being taught continuously for three years, i.e., in Classes VI, VII and VIII.

Most social sciences and commerce teachers in the sample school classes relied heavily on writing on board, reading the textbook and explaining the points. There were a few hands-on activities, group works and projects. Teacher posing questions and students answering them was the only interaction between teachers and students. Many a times, questions asked were very superficial, without making the child inquisitive and were just based on lower-order thinking skills like remembering facts. Textbooks were used for testing the learners' rote learning skills. Only in a few classes, teachers encouraged students' active participation. The discussions carried out in classrooms in the form of questions and answers did not provoke the learners. Many students were inactive during class lectures. However, teachers managed classes better. At times, they could appreciate students' answers and help them to find answers, though the quality of questions, as pointed out earlier, was superficial and recall-based. In most classrooms, students were silent, docile and passive. All these indicate that social sciences and commerce teachers' classroom practices are generally teacher-centred.

A major section of people in Haryana and Uttarakhand reside in rural areas and agriculture is the major source of livelihood. Cutting across schools, a few students connected social science concepts and topics with daily life issues such as agriculture, weather, monsoon, village panchayat, environment, state and national level elections. Girl students highlighted gender discrimination they face in their homes and shared in classrooms. Occasionally caste and religion find space in a few classroom discussions. However, all these depend mainly on the teachers' interest and motivation. Also, the study found students not getting enough opportunities to share their lived experiences in classrooms. It was common to see the students not being able to differentiate experiences which can be shared in classroom from those which need not be. In a few occasions, rural students were not able to understand the urban-centric contents in Business Studies course such as multinational

companies and functioning of corporate sector. Many teachers reported that students were not “intelligent enough” to connect social sciences and commerce concepts with daily life experiences. Compared to the scope available in NCERT textbooks, the amount of discussion taking place in classrooms, as reported by students and teachers, was relatively less. However, a new beginning is made in the social sciences and commerce classrooms, providing scope for discussions on social issues.

Teachers did endorse that the textbooks, particularly the political science textbooks, provided opportunities for developing the national curricular concerns. However, their perception towards national curricular concerns NCC as expected in national curriculum framework documents was not satisfactory. This was true for teachers in both the states and centrally funded sample schools.

The sample schools in both Haryana and Uttarakhand introduced changes in the assessment practices in the light of NCF-2005. The state of Haryana introduced semester system from 2006 for Classes IX-XII. Uttarakhand introduced CBSE pattern prevailed prior to 2009. JNVs and KVs introduce assessment practices as directed by the CBSE and their respective administrations. There are a few similarities and differences in the states and central boards’ assessment practices. The end-of-the semester examinations of Haryana schools for Classes IX and X are almost similar to the CBSE summative assessment. However, the CBSE gives emphasis on both formative and summative assessment equally, whereas the Haryana Board still gives emphasis on closed-book written examinations at the end of each semester. While social sciences and commerce students of CBSE schools reported conducting project works and hands-on activities more frequently, there was a complete absence of these in Haryana and Uttarakhand Board schools. Even if these activities were noticed in some schools, most of them were carried out for name sake. There was a clear divide between students and teachers with regard to their perception on the semester system in Haryana. While students reported liking the semester system, it was a major source of stress for teachers. Students reported that they need not have to study vast syllabus and textbooks for closed-book examinations, whereas teachers felt that they were pressurised to teach large amount of syllabus within the short span of time, to prepare students to take on Board level semester examinations. Teachers had to set question papers for

monthly tests called Unit Tests held twice in a semester, prepare and submit mark details of these tests and at the same time prepare students to take on the semester examinations. Uttarakhand also changed the examination system but not as that of Haryana. Rather, they followed CBSE in a half-hearted manner leaving many issues unresolved. Marks were allotted for continuous and comprehensive evaluation (CCE) and for doing projects, yet teachers and students were not found doing projects and activities as seen in CBSE schools. The CCE introduced by the CBSE has increased the workload for the teachers working in JNVs and KVs. Class XI students of the CBSE schools reported difficulties in transition-moving to annual examinations from CCE system.

Though the semester system has reduced the stress levels of students in Haryana, as pointed out earlier, it has increased the stress levels among the teachers. One important source of stress for the students in general in both Haryana and Uttarakhand was the use of five books—four brought out by NCERT (four subjects—history, geography, economics and political science) and one (disaster management) brought out by the CBSE / SCERT. Another source of stress was the non-comprehensible nature of contents particularly the NCERT Hindi version history textbooks. Both teachers and students found it difficult with regard to some contents in history textbooks.

Students' learning achievement in the sample schools was low—less than 40 per cent. Their learning levels were relatively better in *social sciences* and *sociology* than in commerce subjects—*business studies* and *accountancy*. Learning gaps across school managements was high in Haryana than in Uttarakhand. Compared to CBSE school students, students' learning achievement was relatively low in schools run by state governments of Haryana and Uttarakhand. However, the learning achievement gap was not wide and consistent across subjects. Compared to Uttarakhand, the learning achievement of Haryana students was better. There was a wide gap in the learning levels of boys and girls in Haryana with boys' performing better in some subjects. In Uttarakhand, girls' learning levels were better in almost all subjects at the higher secondary stage. Learning levels in Classes IX–X social sciences were moderate and similar for both boys and girls. The learning achievement of Other Backward Class (OBC) students were better than the students belonging to other categories. This was particularly found in Class XII *sociology* and *accountancy* both

in Haryana and Uttarakhand. Though urban students in general had better access to learning resources, this has not resulted in better learning achievement in the sample schools. The learning levels across Classes IX to XII suggest that students were able to recall what they have learned in Classes IX and XI much better than what was taught in Classes X and XII. It was expected that students at the higher secondary stage are grown up and they can understand abstract ideas. The level of learning achievement in different subjects and topics within subjects indicated that students had difficulty in dealing with theoretical and legal aspects. Students answered most topics which were related to their daily lives. However, as a caveat, considering the period and the way in which achievement tests were conducted in schools, many of these evidences should be treated as preliminary observations which require further investigation.

Education is in the Concurrent List of the Indian Constitution and State Governments play crucial role in providing schooling in India. Although some states prepare syllabi and textbooks on their own, states aspire to use national level syllabi and textbooks and expect that this would result in improvement of teaching learning processes in schools. The present study shows that this need not be so. The present study reveals that merely following NCERT syllabus and recommending NCERT textbooks to schools may not result in higher learning achievement.

A Study on Implementation of Inclusive Education at the Elementary Level in the selected North-Eastern States

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The north-east India, the eastern most region of the country, is connected with the mainland through a narrow corridor squeezed between Nepal and Bangladesh. It comprises eight states and the location of the region is strategically important as it has international borders with Bangladesh, Bhutan, China, Myanmar and Tibet. The present system of education in the north east India started in the early years of the nineteenth century with the coming of the Christian missionaries who came as traders. According to the 2011 census, the total literacy rate in the region stands at 68.5 per cent.

Education is the most potent tool for socio-economic mobility and a key instrument for building an equitable and just society. Elementary education provides the foundation for development of education at higher stages. Hence, elementary education needs to be strengthened. The Constitution of India guarantees eight years of elementary education to each and every child in the country. Elementary schooling consists of five years of primary schooling and three years of upper primary schooling. The Government of India has launched a number of programmes for spreading elementary education in India, including the DPEP of 1994 and the new programme launched by the government with regard to improvement of elementary education is SSA in 2001. The programme was launched with an aim to ensure entry, retention and education of children between 6–14 years of age. Inclusive education is an integral component of SSA which promised to make 'education for all' by 2010. Many policies and Acts have been legislated to make inclusive education a reality. New policies

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have been launched to overcome limitations of previous efforts such as the *Action Plan for Inclusion in Education of Children and Youth with Disabilities (IECYD)* and the *National Policy for Persons with Disabilities in 2006* which stressed on modifying the existing infrastructure facilities, teaching procedures in order to make it more children friendly.

Inclusive Education (IE) refers to providing quality education to children with special needs (CWSN) in mainstream schools. This was clarified in the Salamanca Statement and Framework Action (1994), which is a landmark for IE. This statement provides directive for reorganisation of all school activities to facilitate learning of CWSNs in mainstream schools. As per the statement, inclusive schools must reorganise and respond to the diverse needs of their students, accommodating both different styles and rate of learning and ensuring quality education to all through appropriate curricular, organisational arrangements, teaching strategies, resources and partnership with their community. There should be a continuum of support and services to match the continuum of special needs encountered in school. Keeping this in view systematic changes are required in general education system to meet special educational needs arising out of limitations in learning of each child.

In India integration was a major reform of the 1970s, the need for IE become evident from the fact that despite complete financial support under the IEDC scheme for integrating learners with special needs into the educational system, only 2–3 per cent of the total population of these learners are actually integrated into the regular schools. Dissatisfaction with progress towards integration, the costs involved and the advantages of an inclusive environment in bringing about increased acceptance of learners with Special education needs (SEN), led to the demands for a more comprehensive and drastic change which will benefit all children especially CWSN. IE emphasises not only education of students with disability but a process through which all students including those with disabilities are educated together in regular mainstream schools, with specially designed, appropriate and adequate support in their neighbourhood schools. Hence the goal of IE is to prepare all students, irrespective of academic level or ability, disability, caste, culture, religion, language or ethnic group meet the challenges and requirements to participate as equal partner in the society and to contribute to the development and improvement of the community.

The objectives of the present study was to identify and study the different components available in the schools for providing quality education for CWSN such as teachers training, curricular/ instructional adaptations, teaching learning process, teaching learning materials, evaluation system. It also examined the implementation of IE and attempted to find out if the children with disability were really benefitting from it or not. The population for the present study was all the Inclusive Elementary Schools from the three North Eastern States, that is Assam, Meghalaya and Tripura. A sample of 30 Elementary Schools, which provided inclusive education, was selected, that is 10 from each state of Assam, Meghalaya and Tripura. The sample also included State Authority, teachers, and parents. The tools used for data collection included questionnaire, observation schedule, and interview schedule for the heads of the schools, teachers, CWSNs, children without special needs, parents, state educational authority. The data collected were analysed using qualitative technique.

The major findings and observations of the present study are described briefly. The study indicates that majority of the schools has proper building for the children. Looking at the accessibility for children with disability, the study indicated that majority of the schools has ramps and ramps with handrails, whereas 23.33 per cent schools do not have these facilities. Further, when looking at the availability of toilets, 36.66 per cent schools have toilets which are common for all children, 56.66 per cent of the schools have separate toilets for boys and girls with no toilet facility for disabled children but only 6.66 per cent schools have the facility for a separate toilet for the children using wheel chair. It was found that majority of the schools (76.66 per cent) were using the traditional bench-desk and chair-table as seating arrangement for the students and only 3.33 per cent of the schools have a special seating arrangement for the children with disability. These shows that necessary facilities for the CWSN are not properly provided which might lead to less enrolment and retention of CWSN in mainstream schools. When it comes to the basic requirements like drinking water of children, it was found that nearly 46.66 per cent of the schools have no provision for drinking water and 53.33 per cent have the facilities. Also in the study it was found that only 3.33 per cent of the schools have library and computer facilities. As regards electricity, the study shows that 56.66 per cent have electricity connection and 43.33 per cent do not have the facility.

The unavailability of proper aids and appliances may hamper the performance and progress of children with disability(s). From the present study it was also found that 43.33 per cent schools have adequate playground, 20 per cent have inadequate facilities and 36.66 per cent do not have playground at all.

Looking at the academic qualifications of teachers, it was found that majority of the teachers (43.66 per cent) were twelfth passed and 5.63 per cent teachers were post graduates. Out of 71 teachers, only 42.25 per cent of the teachers have professional qualification or degree such as D. El Ed, JBT, BTC, B. Ed (general and Special), NTS and D.Ed which is an essential criteria for teaching at the different level. From these trained teachers only 10 per cent has B.Ed in special education. From the study it is clear that majority of the teachers do not possess the professional qualification or any training in inclusive education required to teach at the elementary level and CWSNs. This study found that inclusive education could be successfully implemented if the level of teacher's competency increased and this can be done if proper training and courses are being given to them which will boost their confidence. When it comes to teachers receiving training programmes in inclusive, it was found that only 11.26 per cent of the teachers were trained in different kind of training programmes. Another challenge faced by the teachers was in assessment. Due to lack of training and knowledge proper and modified assessment could not be done properly or individual attention could not be given to these children. What was more challenging for the teachers was shortage of teachers and there were schools under study which were still multi-grade school. About 60 per cent of the teachers voiced that they had to perform other non-teaching duties as well and hence there's not much time for preparation for inclusive teaching. Again, majority of the teachers expressed that they are not qualified to teach CWSNs and hence there is a need for special teachers to handle CWSNs. Another factor which posed as a challenge for the teachers was lack of interest and cooperation from the parents of CWSNs which acted as a hurdle for the teachers in dealing with these children.

This study also examined Principal's perception on inclusion of CWSNs in the mainstream schools. Majority of the principals felt that general education should be modified to meet the needs of all students, including CWSNs and were of the opinion that general education teachers can help the CWSN to succeed but this can

be done only when teachers are given proper training. However, looking at the requirements and facilities required Principals were less certain, but still favoured policy that mandates that the CWSN be integrated into the general education programme. The data collected from the State Education Authority indicated that the states have identified children with special needs and majority of them were enrolled in different schools. However the data further indicated that there were no teachers trained in this area. In order to assist CWSNs, resource teachers were engaged at the district level but not appointed for each school. This can hamper or slow down the teaching learning of both teachers and CWSNs. As per the information given, the resource teachers have to prepare IEP and assessment procedures for each child as per need. When it comes to curriculum adaptation it was found that the states have not yet adapted the curriculum but adaptation is being done by the resource teachers themselves in the classroom as per need.

The study shows that resource teachers and teachers are responsible for preparing TLM for CWSNs. Capacity building or training of teachers is one of the most important aspects for a successful and effective implementation of inclusive education. Results show that the state do provide training in the area of inclusive education but for a very short duration of even one day. This indicates the seriousness towards implementation of inclusive education. Evaluation is also one of the areas which require adaptation as per needs of the children. The data collected point that evaluation was being done by resource teacher for CWSNs at regular interval and adapted as per need. Though it was reported that teachers were being trained in inclusive education, in the field it was found that teachers lack training and skills in effective implementation of inclusive education. It was also seen that most of the schools and teachers do not use TLMs due to unavailability of TLMs. Again it was observed that curriculum has not been adapted in proper manner and teachers still used the traditional approach to teaching for all children. Assessment and evaluation of CWSNs was also being done in the same way without modification for all children. There is an urgent need to engage proper management and monitoring agency/committee to see the requirements and needs of CWSNs and that they benefit from it.

Results show that there is still a long way to go for making schools a place where all children irrespective of ability or disability participate, learn and benefit from education provided to them.

Further, we can say that inclusive education is possible if there are appropriate support system provided to all concerns such as required infrastructure and facilities, funding for schools, providing trainings for teachers in the area of IE and aids and appliances and also curriculum adaptations for children. It is increasingly realised that inclusive education is indispensable for the society to progress. It is based on the principle of fundamental rights. However, one has to overcome the barriers that hamper inclusion. As already mentioned earlier that the study concentrates on those schools which are inclusive schools, hence the present study is of vital importance for the States, principals, teachers, students and parents as well of all inclusive schools. The findings of the present study may be utilised in different ways.

Teacher Education Curriculum of North-Eastern Region in the Light of NCFTE, 2009 An Analysis

BALAIADA R. DKHAR*

Education is the development of individual according to his/her needs and demands of society, of which she/he is an integral part. It aims to develop individuality and at the same time assists in the attainment of social efficiency and dynamism. To achieve this goal, education needs to be adopted according to the needs of the society. As the needs and aims of the society change, the entire structure of education transforms accordingly. "Change is the law of nature", said William Wordsworth. According to the needs of time, the society updates itself and consequently education also changes to keep pace with the society. From the primitive times till today, a great change has taken place in the system of education. The world has entered into an age of information and communication technology which has opened up new and cost effective approaches for expanding the reach to education. The convergence between technology and education has expanded new vistas for social and economic development.

To prepare quality teachers is a global need of the day and, therefore from time to time efforts are made to make the teacher education programme more effective and of high quality. At times, the need for restructuring and reforming education is felt in line with the expectations of the society. This affects directly or indirectly the teacher education programme because teacher is a precious resource to develop the future leaders and citizens of the country. It is obvious that teachers serve as models for their

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students' behaviour. Issuer (1983), pointed out that students not only learn through what the teacher says, but also through what the teacher does. Hence, teacher education programme should prepare the teachers to be role models.

Teacher education curriculum is the sum of the student teacher activities which the training institution sponsors for the purpose of achieving its objectives. It is the learning experiences of the students under the influence of the training school or college of education. It is conceived as the whole of the interacting forces of the total environment provided in the college/institution. The curriculum has to be functional; it must satisfy the needs of the changing times and should be pursued vigorously.

The objectives of the present study were — (i) To analyse the existing secondary teacher education curriculum of all the North Eastern States with reference to the guidelines of NCFTE, 2009; (ii) To find out the gap that exists in secondary education curriculum of North Eastern States; (iii) To study the curricular areas (Curricular Area A) of teacher education curriculum of North Eastern Region in the light of NCFTE, 2009; (iv) To study out the pedagogical component (Curricular Area B) of teacher education curriculum of North Eastern Region in the light of NCFTE, 2009; (v) To find the school internship (Curricular Area C) of teacher education curriculum of North Eastern Region in the light of NCFTE, 2009; (vi) To study the transactional modalities of teacher education curriculum of North Eastern Region in the light of NCFTE, 2009; (vii) To examine the evaluation process of teacher education curriculum of North Eastern Region in the light of NCFTE, 2009; (viii) and to find out the perception and suggestions of different stakeholders (principal, teacher-educators and pre-service teacher trainees) regarding the secondary teacher education curriculum of North Eastern States.

The operational definition of the terms are used as — (i) Teacher Education Curriculum: Here teacher education curriculum means the curriculum followed in the B.Ed. programme of all the eight North Eastern States. The curricular areas which was covered are curricular area A (foundations of education), curricular area B (curriculum and pedagogy), curricular area C (school internship), transactional modalities and evaluation procedure. (ii) North Eastern Region- In this study North Eastern Region includes the states of Assam, Arunachal Pradesh, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim and Tripura. (iii) NCFTE, 2009-In the

present study NCFTE stands for National Curriculum Framework for Teacher Education (NCFTE, 2009), which was developed and published by National Council of Teacher Education, New Delhi.

The methods of the present study were — (i) First all the B.Ed. syllabi of the entire secondary teacher education curriculum from all the central universities located in all the eight north eastern states were collected. The central universities situated in the north east region are the Assam University, Assam; Manipur university, Manipur; Mizoram university, Mizoram; Nagaland university, Nagaland; North Eastern Hill university (NEHU), Shillong (Meghalaya); Rajiv Gandhi university, Arunachal Pradesh, Sikkim university, Sikkim and Tripura university, Tripura, (ii) To analyse the curriculum, content analysis was done on different dimensions like curricular area, pedagogy area and school internship. It was also done to find out the gaps that exist in the present teacher education curriculum, (iii) In order to find out the transactional modalities and the evaluation process of teacher education curriculum of North Eastern Region in the light of NCFTE- 2009, classroom observations were carried out, and (iv) Lastly, to find out the perception as well as suggestions of stake holders (principal, teacher-educators and pre-service teacher trainees), the data were gathered through interview, questionnaire and focus group discussion.

After analysis of all the B.Ed. curriculum of the North East, certain factors have been identified as important aspects to be considered while framing/developing a syllabus. These are contact hours, internal assessment, course objectives, transaction mode, practical area, course content, practicum, assignment, session work, mode of assessment, grading and references which are mandatory to be included in each course in the syllabus; which is missing in some of the B.Ed. syllabus.

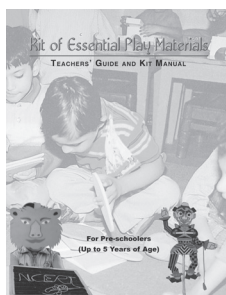
The results of the present study indicate that all the universities of North Eastern states offer one year B.Ed. and mostly under semester pattern. There are B.Ed. syllabi, which do not have the courses/course content as per NCFTE, 2009 guidelines such as inclusive education, ICT and e- learning, environmental education, vocational education, peace/value education, human and child rights, gender issues, research and innovations, local/community knowledge, HPE and yoga. This calls for a revision of the B.Ed. syllabi as per the recommendations made by NCFTE, 2009. Furthermore, the findings reveal that some of these components were integrated

in other B.Ed. courses like equitable and sustainable development/ education for sustainable development. Whereas, it was found that in some of the B.Ed. these were made into an elective or optional course. Instead, it would have been better to make these into a separate course, as there may be chances of student teachers not opting for these courses and the components of yoga too needed to be included which is missing in some of the B.Ed. syllabus. The course content which has less coverage includes those on local culture/issues and concerns, art education/ craft/ heritage, constructivist approach, CCE in teacher education, linkage between theory and practice. Over lapping of contents was also found out in some of the B.Ed. syllabi.

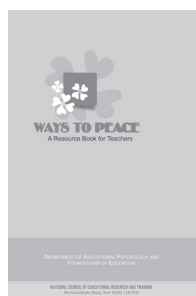
With reference to the practicum as one of the significant component in the B.Ed. curriculum, it was observed that most of the B.Ed. syllabi have practicum along with the courses. However, in most of the B.Ed. curriculum working with the community and multi- cultural placement was not included. With regard to the internship in teaching and its duration; no uniformity was noted in all the B.Ed. colleges/institution. The study of school subjects such as sciences, social sciences, languages and mathematics needs to be organised as pedagogic subjects; rather than the study of individual school subjects of economics, geography, history, political science, or biology, chemistry, physics. The mode of transacting the curriculum was mostly lecture method with few of the teacher-educators still giving notes. Assessment pattern included both internal as well as external evaluation.

The research findings of this study depicted a clear picture on the nature as well as the structure of teacher education curriculum of all the North Eastern States. It also brings into light the gaps which exist when compared with the guidelines of NCFTE, 2009. The study also revealed that there exist differences among secondary teacher education curriculum as well as the B.Ed. syllabus and the coverage of course content in all the North Eastern States. This study would be a benchmark for the syllabus planners/ developers/framers, teacher-educators and others who strive for quality teacher education.

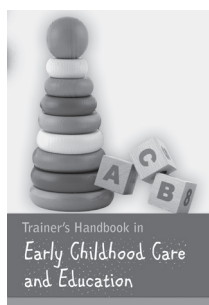
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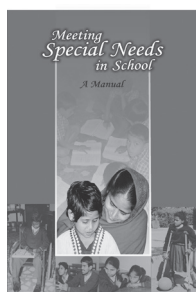
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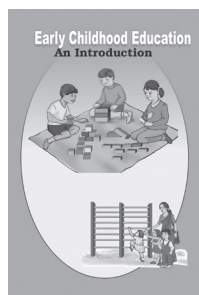
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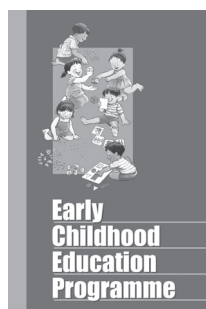
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