ISSN 0019-4700 (Print)
ISSN 0972-561X (Online)

Indian Educational Review

Volume 55 **Number 1** **January 2017**

RESEARCH PAPERS

विद्यया ऽमृतमश्नुते
एन सी ई आर टी NCERT
राष्ट्रीय शैक्षिक अनुसंधान और प्रशिक्षण परिषद्
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NCERT

HALF-YEARLY JOURNAL OF EDUCATIONAL RESEARCH

INDIAN EDUCATIONAL REVIEW

Volume 55 Number 1 January 2017

CONTENTS

Editorial

This issue of *Indian Educational Review* carries six research papers and summary of two projects completed under the scheme of Educational Research and Innovations Committee. The papers included in the first category focus on various aspects of teaching-learning process. The first paper by Shweta Tanwar highlights that education is expected, as a process, to build confidence and decision-making power within individuals but it has not been able to make any change in the lives of girls. The pattern of division of work among men and women persists, as society still accepts patriarchal culture. Formulation of policies and educational programmes is not enough to bridge this gap; rather, there is need to recognise women's actual potential through education and employment opportunities which caters to their needs. The paper by Garima Bansal examines the constraints faced by primary school teachers in practicing inquiry-based environmental studies curricula using multiple case study design. Despite strong theoretical grounding, there is limited evidence that primary teachers effectively engage students in pedagogical approaches associated with inquiry-based science curriculum in classroom settings. Abdul Gafoor and Sarabi examined the effect of gender, perceived difficulty, time allocation and private tuition on achievement in mathematics among secondary school students. The study also suggested the need for putting efforts by students, teachers, parents and administrators to enhance the quality of students' learning in mathematics. In her paper, Sonika Chauhan attempted to examine the variations within teacher education curricula of three states— Delhi, Chhattisgarh and Madhya Pradesh. All the three states have also developed their curriculum keeping in mind the vision of NCFTE and have geared their course structure from the over-emphasis on theoretical learning into a combination of theory and practice. In the next paper, Chandra B.P. Singh and Ravi Shankar Singh have examined the Hindi language competence of student's studying in KGBVs in Bihar, deployment of teachers and their intensive training for improving Hindi language. They reported the non-availability of language teacher in teaching Hindi and their limited understanding of pedagogical processes left the teaching-learning transaction unattended. The next paper by Sarmila Banerjee examined the role of teacher competence and teaching effectiveness in high achievement (in Life Science) irrespective of the different evaluation strategies used were examined. The study also gave indications about the relative suitability of these strategies used in measuring students' performances in Life Science subject.

This issue carries summary of two research projects conducted under financial support by ERIC. These are— (1) An In-depth Study of the Implementation of Hindi Language Curriculum at Upper Primary Stage, and (2) Curricular Intention, Teachers' Comprehension and Transaction of Contemporary EVS Textbooks: A Study.

The *Indian Educational Review* focusses on enriching the discipline of education by disseminating finding 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 freelancer writers are cordially invited for the next issue. We seek your suggestions and views for improvement of the Journal and research initiatives.

A. K. Srivastava
Academic Editor

Indian Educational Review

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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Research Papers

More Educated but Less Employed: The Situation of Women in Case of Employment

SHWETA TANWAR*

ABSTRACT

The National Family Health Survey (2005–06) shows a striking trend of employment among men and women. Women are found to be enrolled more in traditional, domestic, and low-skilled jobs. Females' less representation in the economic outcomes lead to weakening of their actual potential. Ultimately their participation is assumed to be negligible in the economy. The resulting inequalities tend to restrict women's access to resources, control over decision-making and participation in public life. This paper argues that education, expected as a process of building confidence and decision-making power in individual, has not been able to make any change in the lives of girls. Education is not making any difference to their participation in employment sector. The pattern of division of work among men and women still persists as society accepts patriarchal culture. Actual reality lies in the fact that formulation of policies and educational programmes alone is not enough to bridge this gap; rather, there is a need to recognise women's actual potential through education and employment opportunities which caters to their needs.

Introduction

The expanding opportunity for women in the field of employment does not seem to be a reality. Some recent studies show a completely different picture of the condition of women in the employment sector. According to Mazumdar and Neetha (2011), except one or two, in every major industry women's share of employment had fallen in 2009–10 in comparison with 2004–05 as per the standard measure. It could be seen that, women were found to be more in traditional, domestic, and low-skilled jobs in the employment

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sector. "Engagement with the locale outside their place of residence is losing preference among urban and rural women in the higher income groups. Such cultural preferences of females to remain within their domestic space rather than engaging with activities outside have been argued much earlier" (Abraham, 2013, p.104). Gender-based segregation of the occupations can be seen as a result of discriminatory practices against women which come through prejudices, social beliefs, and stereotypes about women's inability to perform certain tasks. "Certain industries declare them (women) to be unsuitable for technical as well as manual jobs, others declare them to be unsuitable for managerial and administrative jobs as well as unskilled work, yet another group finds them unsuitable for field duties" (Government of India, 1974, p.176).

Gender differences in the occupation lead to different economic outcomes for the sexes in terms of earnings, hours of work, and other standards. Females' less representation in the economic outcomes lead to weakening of their actual potential. Ultimately their participation is assumed to be negligible in the economy. The resulting inequalities tend to restrict women's access to resources, control over decision-making and participation in public life. "In India, the other side of a low female LPR (Labour Participation Rate) is a substantially high proportion of females reporting their activity status as attending to domestic duties. In 2009–10, 34.7 per cent of all rural females and 46.5 per cent of urban females in India were attending to domestic duties" (Thomas, 2012, p.47). It shows a striking difference between the urban and rural divide as it is unexpectedly higher in case of urban. Though the literacy rate and percentage of educated women are relatively higher in urban areas, the level of confinement within the domestic sphere is higher in urban area. It leads to a question that why, despite being educated, women are confining themselves into their homes. There are feminists who emphasise that economic analysis tends to make a large proportion of women's work invisible because income earning activities were considered as work and other activities (services for family) are not counted. Mazumdar and Neetha (2011) emphasises on the system of statistical reporting which plays an important reason for the reportedly low LPR of women. Women's role in reproduction and households activities, such as caring for the young and old, cooking, and household industry do not find recognition in the National Income Accounting or other economic statistics. It is the demand of such feminists to make

this work visible in the statistical estimation. But this demand is problematic in itself as women will remain confined to their homes and will not come out of homes to work independently leading to strengthening of their roles as only home makers. The requirement is not of visibility of household chores in the employment data but of recognition to educate women, keeping in mind the various drawbacks in implementation of educational programmes and of empowering women through employment opportunities.

In this paper, after the introduction, the second part examines the data displaying women's low participation in employment sector. The third part emphasises on primary socialisation of girls which gives them the first experience of gendered roles they play in their lives. The role of school in strengthening the gender stereotypes and further limiting girls' future aspects are discussed in the fourth section. The fifth section explains the combined impact of both, the primary socialisation and school factors on women's limited career options leading to lesser opportunity in the employment market. The last section tries to point out the various reasons which impact women's less representation in the employment sector and hence maintenance of the hegemonic structure of society which leads to subordinate status of women in all spheres of life.

The Status of Women in the Employment Sector

Education is essential for attaining knowledge and skills. It is a means of getting employment to earn and feel empowered. Being employed gives an edge over those who are not employed as employment enables a person to become independent. But in the case of women, education does not necessarily guarantee employment. Out of the few sources of information, the National Family Health Survey (NFHS) is one of the sources which provide data on employment and unemployment. According to NFHS (2005–06), women are much less likely than men to be employed. The results of NFHS (2005–06) are surprising in case of women as their education is in no way helping them to get employment. The data according to NFHS (2005–06) shows that there are 36 and 93 per cent literate women in Rajasthan and Kerala, respectively. On the other hand, the percentage of employed women is 46 and 27.9 per cent for Rajasthan and Kerala, respectively. On comparing both the data, it can be seen that the gap between educated and employed females in Kerala is very large. In Rajasthan, the low literacy rates of women can account for low employment but Kerala

having such a high literacy rate still has very low employment rates, much lower than Rajasthan. It implies that education is not making any difference to women's participation in the employment sector. A case study by Kodoth and Eapen (2005) throws light upon the gender aspect of dimensions like property rights, education, employment, and freedom from violence in Kerala. It is considered as the state of much lower gender gap in education, as well as in political and economic aspects, indicating better conditions of women. However, the study revealed that there are hidden gender inequities in Kerala.

The question arises that what happens in girls' life during this transition period of education and getting ready for a career that restricts their entry into the field of employment. What loopholes does education of girls have which are not enabling them to have autonomy and empowerment and why it has been limited as just a means to reinforce traditional thinking confining them within the interests of family, child care, health and education? What impact does the life cycle of girls leave on their employment opportunities?

The NFHS data throws light on the actual reality and highlights the gendered pattern prevalent in the state despite having attained gender equality in education. "However, it is striking that the proportion of females attending to domestic duties is relatively high in urban areas and among the better educated — the very segments of the female population that are likely to face less social constraints on labour participation" (Thomas, 2012, p.47). There are educated women who can participate and contribute to the Indian economy but find it difficult to come out of their niche and transform their education into productive skills through better employment opportunities. The question arises that what factors can be held responsible for women's inability to exercise her decision making power leading to a life lived for others. The factors responsible for such a condition must be attended to bridge this gap for better utilisation of the skills of women citizen which is otherwise going waste. This paper thus attempts to look at the various reasons which cause hindrance in women's employment opportunities.

With regard to India's employment sector, the recent shifts account for the withdrawal of women from the labour force on a large scale basis. "Across nearly all industries, the impact of technological and other changes is shortening the shelf-life of employees' existing skill sets" (World Economic Forum, 2016, p.3). The slowdown of India's employment structure affects its women

citizen the most leaving them as only a marginal percentage in the working population. As noted by Thomas (2012), the new manufacturing employment created during the first half of the 2000s, have 3.7 million women out of 9.6 million employees. But during the second half of the 2000s, 3.1 million out of the 3.7 million workers who lost jobs in manufacturing in India were females.

Education does not necessarily empower and enhance women's autonomy in India; rather, it helps in modernising and internalising patriarchal norms. "In 2009–10, among urban females with graduate degrees, those who were reported to be attending to domestic duties were close to 60%, which was almost twice the corresponding proportion of rural females with primary or middle-school education. This movement of women back to household work can be attributed to the increased availability of earning opportunities for male members of the family" (Thomas, 2012, p.42).

It is evident from history that girls and boys are always given unequal treatment which is reflected in today's society also. People think that women need not go out of home to earn because they need to be protected from the world outside. Therefore, it is the duty of men to go out and earn for family. It is assumed by policy makers that education may provide a solution to the inequality that girls face in all spheres of life. But the striking results of NFHS (2005–06) shows the reality that even after getting education the employed women are so less. What happens when it comes to their entry into the employment sector?

This paper argues that education, expected as a process of building confidence and decision-making power in individual, has not been able to make any change in the lives of girls. It clearly shows that girls despite having attained basic education are not able to step out of their homes to work. "Aspirations from the process of education per se are generally limited to making girls suitable for matrimony in accordance with the community's values"(Kumar and Gupta, 2008, p.19). The societal norms are so powerful that they do not allow females to be a part of the employment sector.

The Gendered Roles in Family

In pre-industrial societies, different tasks were given to men and women. Women were dependent on men for food and protection which produced a pattern in which female activities (household chores and child care) were given less credit than male activities.

In a book on gender roles, Lindsey (2010) mentions that harmony of family could be maintained when partners assume different roles. If there was any change in the roles then the survival of the family was assumed to be in danger. The pattern of division of work among men and women still persists as society accepts patriarchal culture wherein male has all the power and women have no autonomy. Girls get lesser opportunity in the world outside home as they are seen merely as homemakers who contribute to domestic responsibilities.

From an early age, girls are socialised to see domestic sphere as their only destination where marriage and motherhood are the ultimate destination in a girl's life. According to Dube (2001), in childhood itself, it is made clear to girls through 'indirect messages' (customs and rituals) that she has a specific role in society having boundaries out of which she should not step. In an essay on childhood and education of girls in India in the context of their socialisation in the family, Kumar (2010) also draws attention towards the customs and rituals under which girls are brought up and gendered into womanhood. Such circumstances pressurise girls to live according to the norms of femininity. As noted by Kabeer (1994), household interests and needs motivate individual behaviour. This restricts the freedom of girls to develop their capacities to the fullest.

Girls Empowerment: Through Schools?

After family, it is the school where a child gets the chance to socialise with other children. Schools are expected to help children in getting ready to take part in the society as a responsible citizen. But when it comes to the matter of gender equality, then it plays a key role in strengthening of gender stereotypes. The aspects of the education system at school level that lead to unequal opportunities for girls and boys include policies and resource allocation, quality of facilities and education materials, curriculum, etc. The experiences that girls get in schools give them a feeling of being subordinate to boys. In an article on gender and curriculum, Bhog (2002) observes that women education is not seen as the goal; rather, it is a means to an end, i.e., betterment of the family and the nation. He further observes that, in nearly 50 per cent texts, only men were the actors and women were nowhere in the narratives. In few lessons, women were confined to traditional roles, such as mothers, sisters, etc.

It can be seen that there is recognition to empower girls but a gap exists between recognition and implementation. In an article

on the problems leading to restriction of girls' overall development, Kumar and Gupta (2008) focussed on Kasturba Gandhi Balika Vidyalaya Scheme, an educational programme set up by the government for empowering girls. It mentions that educational policy makers assume that once girls are given access to schools their life options will expand but the complexity lies in the fact that there is no proper implementation of the programme with many loopholes. The planning of scheme lacks professional understanding of girls as human beings and as learners. The budget sanctioned for the scheme is also very less. Also, there is more focus on the accomplishments of the NGOs working in collaboration with the schools than on the girls' scholastic achievements.

Other factors strengthen the hold of patriarchy like the curricula, content, language, images in texts, and the perceptions of teachers. "In the classroom too, girls are expected to perform tasks like cleaning and sweeping, reinforcing the gendered division of labour" (NCERT, 2006, p.4). Most of the girls' talent remains hidden and covered as they hardly get any chance to show it and that is why they do not feel encouraged. Since girls have always been associated with nurturance and house-keeping, they have limited access to science and technology as it is assumed that these fields are time consuming. Also, it is believed that these fields are meant for only males. Kulkarni and Hatekar (2013) observed that females are stereotypically believed to be inefficient in hands-on mechanical ability. Such stereotypes govern women's access to employment, resulting in those occupations for girls which are not given much importance and represented as low level in employment sector. This segregation begins from the school itself as Kumar and Gupta (2008) throws light upon the girls' choice at school level which is restricted to softer disciplines like humanities, social sciences, home science and languages. Most of the girls' mental world remains far away from engagement with mathematics, physics, chemistry and biology and their laboratories.

Though some shifts can be seen in the choice of subjects among girls. Chanana (2004) noted an upcoming trend in case of girls opting for more professional courses than the conventional ones. Few women students are showing up in technology and engineering specially electronics, electrical and civil. Also, there is increased preference for specialised management courses like human resource management and human resource development. It shows a shift in the disciplinary choices among women. However, the

question is that which girl gets access to these expensive courses? Clearly, it is understood that the mushrooming private universities offering these courses cater to financially sound families. The girls belonging to such families find it easier to get admission there and have a trendy 'modernised degree'. Girls acquire these degrees to improve marital prospects and also it provides a waiting period before marriage. It is just a means of reinforcing tradition through acquisition of modern skills and education.

Review of Policies

Early post-independence policies formulated a curriculum that was thought to be relevant for girls, based on the understanding that education had to address their special needs as future wives and mothers in the modern nation. The committee on differentiation of curricula for boys and girls viewed it as a perpetuation of existing traditions of unequal division of labour and rejected differentiation on the basis of gender difference. A report '*Towards Equality*' by the Committee on the Status of Women in India (CSWI) (Government of India, 1974) focussed on the slow progress of education in India, attributed to high difference in enrolment rates of boys and girls. It also highlighted the disparity between the education of men and women in spite of the direct actions taken by the states. Along with that the committee also mentioned that educational opportunities did expand in the post-independence period; however, it was relatively slower among women, particularly at the primary and secondary levels. According to the Committee, education does not necessarily lead women to employment. This is because the development of education has been mainly confined to middle class families which display the most restrictive attitude to women's employment outside the home. A combination of factors like educational system, training, job orientation and culture conditioning are responsible for unequal employment status and opportunity for men and women.

Many private concerns do not recruit women into their managerial cadre as prejudices like 'women cannot exercise supervision and control' tend to persist and are difficult to breakdown. The Committee also pointed out to one of the nationalised undertaking policy according to which it was to avoid, as far as possible, appointment of female employees in the organisation. Very few women candidates come forward for job in their organisation due to the terms and conditions. Being a private

business organisation they give due consideration to efficiency, discipline, administrative ability, hardwork and in their opinion women candidates in general were not up to the mark.

It was assumed that women are less efficient than men, one of the reasons due to which they were not able to present themselves in the employment sector despite being educated. In case if women were working then it becomes easy for the recruiters to differentiate between men and women earnings giving excuse of women's less efficiency. This wage differential was then seen as low returns of education in case of girls. Parish and Willis (1993) observed that differences in female and male earnings, presented by statistical data, were seen as proof that returns to education differ by gender. Therefore, the Committee recommended a common course, at all levels, to counter-act the influences of traditional attitudes which regards certain tasks as 'manly' and others as 'womanly'.

Interconnection of Education and Patriarchal Society: Role in Girls' Employment Status

With regard to educating girls, families consider returns in monetary terms and assume it to be lesser than that of boys. Sundaram and Vanneman (2008) emphasises the fact that where girls' labour can contribute to the household's economic, poor parents get tempted to keep their children out of school in order to maximise their immediate economic returns. Alderman and King (1998) explained the gender disparity using a model of parental investment in children. It shows that in low income countries, particularly in south Asia (regional patterns of discrimination especially within India), parents keep in mind the possibility of return from the children while spending on them and gender plays a significant role in doing so. In societies where girls leave the family after marriage, it is expected that sons would provide old age security. But as Chanana (2004) pointed out, some families are letting their daughters to acquire 'modern' education though the reason is that they can afford and also it improves marital prospects.

The division of roles is rooted in the segregation of household chores among boys and girls. To maintain this concept of 'division of labour', girls are directed towards those subjects that help them to become good daughters and good wives. "In spite of a marked change in thinking of many people, the demand for differential curricula comes from parents whose sole object in educating girls is to improve their prospects in the matrimonial market" (Government of India, 1974, p.200).

The other reason due to which parents do not want to spend much on their daughters, education is the dowry driven society and also because the girl's income (if at all she gets the chance to work) goes to her husband and in-laws after marriage. According to Sundaram and Vanneman (2008), cultural practices, such as seclusion of women and prohibitions on girls' free movement directly limit their ability to attend schools and to work outside home. Girls are either not sent to schools or do not receive the same quality and level of education as do boys. Parents tend to train their daughters in such a way that she has to get ready for marriage only and nothing else matters. Also in a patriarchal society, parents' goal is to get their daughter married as soon as possible as it is a burden over them.

After marriage, other problems comes in women's way as they do not get chance to work outside for a longer period of time due to pregnancy, childbirth and child care which are seen as the ultimate responsibilities of women. These factors affect their work experience along with the income and opportunities to have more desirable and better paid jobs, leading to a notion that girls' education can hardly make any impact on their future aspects.

It is like a cycle of processes which keeps on repeating. Firstly, girls are not given appropriate education resulting in few employment options. Even after getting education girls are expected to show more concern over getting ready for marriage. Out of the few options available, girls get lesser opportunities due to fulfilling other duties like playing traditional roles of being a mother, daughter and wife which are very demanding. Dube (2001) has pointed out that a girl has to observe certain rituals before and after marriage, such as fasting for getting a good husband, and then after marriage for the long life of her husband and children, as if matrimony and motherhood are the main purposes of her life. Due to the dual burden of family and work, it becomes difficult for women to give their best leading to many mental, physical and social problems. Then the less representation in the employment sector is taken as an excuse to consider their education as a waste. This cycle of processes goes on and on, resulting in subordination of women.

The government has taken initiatives to educate and empower girls through several policies and programmes like *Sarva Shiksha Abhiyan*, *Ladli yojana*, etc. These programmes make the difficult way a little easier for those girls who cannot afford education. Therefore, people from a socially-deprived background are now

encouraging their girls to be educated and become empowered. But actual reality lies in the fact that formulation of policies and educational programmes alone is not enough to bridge this gap; rather, there is a need to recognise women's actual potential through education and employment opportunities which caters to their needs. "Many of the decision-makers are men also constrains their appreciation of these needs" (Medel-Anonuevo, 1995, p.6). As Kumar and Gupta (2008) highlight, it demands overcoming deep mental blocks in the adult minds about girls' efficiency and capacity to participate in the economic workforce as decision makers. According to Medel-Anonuevo (1995), empowerment can have four components— cognitive, psychological, economic and political, the attainment of which requires collective awareness along with the individual awareness. Therefore, it becomes necessary for women to realise their potential and understand various ways of their subordination so that they can take necessary steps to counteract these constraining factors which are so imbibed in our society.

Survival of Women in Employment Market: Overcoming Challenges

The challenges in a girl's life come at the very moment she is born and continues throughout her life in varied forms. Whether it is home or life outside home, she has to face all the odds keeping in mind the interests of society including her natal family and husband's family. Though she comes out as a strong woman but it cannot be denied that it is a struggle for her at every step in all spheres of life, which she has to accept. It becomes necessary to ponder upon the various reasons due to which women are representing less in the economy.

First, there are the patriarchal norms which can be held responsible for over shadowing the education of women and their limited access to employment market."Most existing education systems at all levels provide and continue a number of 20th century practices that are hindering progress on today's talent and labour market issues" (World Economic Forum, 2016, p.8). The gendered patterns of parental investment can be seen clearly as for girls they like to choose those courses which have lower labour demand and less investment as compared to technical and professional courses which are considered more suitable for boys. This is because women's reproduction capacity may not require technical and professional education and will not be compatible

with their future roles as wife and mother. Coming to the income level of the family, Abraham (2013) highlights the fact that with rising household income and economic development, cultural preferences take priority over education thereby limiting women to domestic area and not feeling the need to work outside.

The second is the social context in which women's job preferences are shaped which play a significant role in reducing women's labour participation in India. These include the restrictions imposed on women's movements outside the household and also discouragement by the husband and in-laws" (Thomas, 2012, p.47). One of the biggest factors for not allowing women to work outside is to maintain their sexual purity. Also, women belonging to upper caste and class get themselves get engaged in status production activities like education of children, health care of family, in rites and rituals, etc. Social status and proximity to the home are the most important factors while making preferences. Commuting from home to workplace leaves less time for family and related matters. As noted by Abraham (2013), shift in location of work place away from home pushes women to withdraw from work as it affects their family.

Thirdly, in India there is much absence of suitable employment opportunities that restricts female LPR the most. As noted by Kodoth and Eapen (2005), nearly three-fourths of the unemployed women reported that they had not been able to find jobs of their preference and keep aspiring for white-collar employment by continuing in the education stream longer due to which they show up in the category of unemployed. There is wide gap between their educational qualification and the type of jobs made available to them. Only low profile jobs are available for highly qualified ones which are discouraging women to step ahead in the employment sector.

Fourth are the powerful economic factors that tend to reduce female LPR. In India, as elsewhere, women face various forms of discrimination at the workplace, particularly in terms of wages. Dube (2001) points out that only less paid jobs are offered to girls as compared to boys to maintain the hierarchy of our social system. Along with that even in same profile jobs women who are equally efficient are paid less than men.

Fifth is the dual burden of family and work due to which women suffer from lot of health issues and find it difficult to handle both family and work simultaneously. "Whatever may be the level of education, the share of household activities (for women)

seems to have increased from 1983 to 2009–10" (Abraham, 2013, p.106). It is again the patriarchal system that does not allow men to contribute in household chores leaving the entire burden on women, no matter she is working or a homemaker.

Lastly, other forms of discrimination include occupational segregation as women are concentrated more in low-skilled jobs which are not given much preference in the employment market. Also, many cases of sexual harassment are there which deter women to step outside their homes for work. Along with that Shiva (2013) reveals another most difficult problem faced by working women who have small children is that they are bound to leave their child in daycare or with maid on whom they have little faith. This can be attributed to the emerging trend of nuclear families leaving no scope for grandparental care of children. Earlier in joint families there were many members in the family who used to take care of children. This creates more tension in women and less concentration on their work. All these factors do not function independently rather they are very much interdependent and can be seen in a holistic manner.

Drawing the attention back to Kerala, the study by Kodoth and Eapen (2005) reveals another interesting finding in urban areas which shows a striking increase in the number of days when women reported 'not seeking/not available for work'. It is to be noticed that people in Kerala enjoy higher wage rates in both rural and urban areas than in other parts of the country leading to higher annual earnings; though, for women, it is comparatively less than men. It further gets enhanced by increasing male WPR (Work Participation Rate), and higher household earnings due to which women tend to withdraw from work into full-time domesticity for significant parts of the year giving greater time to family. But this choice comes with a risk as it reduces women's direct access to earned incomes and increasing their dependent status. A much higher proportion of women in Kerala report themselves as housewives by main occupation thus engaging largely in unpaid work on the household compound and are directing their educational skills towards invisible, home-bound unpaid services.

Overall it's the modernisation of patriarchal norms through education, discouragement at workplace, sexual harassment, gender-biased wage differences, never ending societal expectation and demands from women which provides the ground for women's withdrawal from labour force participation.

Conclusion

There is inverse correlation between educational gender gap and participation in employment sector. It is required to give a thought to the linkages between the education system and socio-economic processes and their influence on women's lives. Educating girls should be connected with economic opportunities rather than focussing only on improving family health and welfare. Equal access to education can act as an important platform for strengthening women's employment opportunities and participation in decision making. Along with education, other factors which include awareness among women at individual and collective levels should also be considered. The powerful, hard to change societal practices based on orthodox thinking are to be given special attention if women need to be liberated. At last one can say that empowerment of women will be possible only if they are given special attention, keeping in mind the various shortcomings of the patriarchal society. Education system is just a part of this patriarchal structure, which is not helping girls to realise their actual potential. The concern still remains the same, i.e., whether the increased access to education would improve women's status or the strong hold of patriarchal system will never lose its ends?

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WORLD ECONOMIC FORUM 2016.*The Future of Jobs Report.*

Teachers' Perception of Inquiry-based Science Education in Indian Primary School

GARIMA BANSAL*

ABSTRACT

Within science education reforms, a pedagogical shift from a teacher-centred, textbook-based instructional paradigm to a student-centred, inquiry-based model is called for. Despite strong theoretical grounding, there is limited evidence that primary teachers effectively engage students in pedagogical approaches associated with inquiry-based science curriculum in classroom settings. This study examines the constraints faced by primary school teachers in practicing inquiry-based environmental studies curricula using multiple case study design. Classroom observations, semi-structured interviews, and focussed group discussions were used for conducting cross-sectional thematic analysis of the data. It emerged that owing to accountability pressures, non-synchronisation between curriculum and assessment practices backed by their personal beliefs in lecture method receded inquiry based teaching-learning practices in classrooms. Finally, possibilities for embedding inquiry-based science in classroom practices are explored.

Keywords: *Inquiry-based science education, scientific inquiry, inquiry-based teaching, Environmental Studies, Teacher perceptions, constraints.*

Introduction

Inquiry has been the central term in the past and present rhetoric of science education reform movement across the world. Rutherford (1964), an early proponent of inquiry learning, emphatically argued that;

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> When it comes to the teaching of science it is perfectly clear where we, as science teachers, science educators, or scientists, stand; we are unalterably opposed to the rote memorisation of the mere facts and minutiae of science. By contrast, we stand foursquare for the teaching of the scientific method, critical thinking, the scientific attitude, the problem-solving approach, the discovery method, and, of special interest here, the inquiry method. (p. 80)

Inquiry Approach to science teaching-learning is about enabling students to internalise the ways of knowledge construction in science, acquainting them with nature of science by suggesting them that the knowledge in science is not the sacrosanct truth but is tentative and modifiable (DeBoer, 1991). This approach is true to science, true to child and true to life (NCERT, 2006). Inquiry-based science education develops an intrinsic motivation in children as joy of finding out, excitement of exploration, and discipline becomes part of life (Harlen, 2000). The origin of inquiry approaches can be traced back to the work of John Dewey who placed "less emphasis on what information is learned and greater emphasis on the logical thinking processes by which new knowledge is acquired" (Dewey, 1938).

Inquiry-based Science Education and the Teacher

Teachers may lead students in scientific inquiry through a variety of pedagogical processes, such as facilitating group work, argumentation, dialogue and debate, as well as providing for direct exploration of and experimentation with materials (Haury, 1993). National Science Teachers Association's position statement on scientific inquiry notes that teachers undertaking inquiry-based science programme for their students design and manage learning environments that provide students with the time, space, and resources needed for learning science through inquiry. At the same time, research suggests that planning and executing inquiry-oriented science lessons require teachers to have good command over the scientific content knowledge (Smith et al. 2007). They should organise classroom talk in a way that questions used (Kawalkar & Vijapurkar 2013) and feedback provided (Chinn, 2006) scaffold science talk to support children's emergent scientific understandings.

This paper examines teachers' instructional practices while implementing inquiry-based science curricula in primary grades. The purpose of the paper is to identify the factors and conditions

facilitating or impeding the teaching-learning of inquiry-based science curriculum in real-time classrooms.

The Context: Inquiry-based Science Education in India

In the post-independence India, great thrust was laid on science and technology as cornerstones for building a prosperous nation. This emphasis percolated to school science in India too and school textbooks were overwhelmingly loaded with factual information to make students fit for the knowledge economy (Correia, Chandran-Wadia, Vishwanathan, & Muralidhar, 2014). Somehow, laboratory work got declined in the quest of learning various brands of science. Eventually, factual information encoded in the school syllabi remained unsupported by any kind of activity, which could make it comprehensible to the students (Mukherjee, 2007).

An attempt to challenge the orthodoxy of Indian science education was raised through People's Science Movement (PSM). The role of PSM is not only restricted to communicating and simplifying science but also to question every aspect of science-related activities (INSA, 2001). An outcome of the PSM was in the form of Hoshangabad Science Teaching Programme (HSTP), a programme for teaching middle school science through experiments, which started in 1972 as a pilot project in 16 schools of Hoshangabad district in Madhya Pradesh. An important difference between the HSTP and mainstream science teaching is that the former emphasised the processes of science — observation, recording, performing controlled experiments, etc., using locally available materials. Whereas, the mainstream school science teaching continued to lay stress on the 'products' of science — laws, theories, etc. One of the major contributions of HSTP is development of textbook series '*Bal Vaigyanik*' for middle grades. PSM has grown and spread all over the country and has led to the upsurge known as *Bharat Gyan Vigyan Jath*a which worked to create the necessary social ethos for absorption of science and scientific ways of thinking among the larger masses (Correia et al., 2014).

The other initiative aimed at developing inquiry-based science education is called exploratory, developed by educators in Pune, where school and college children can explore and experiment, invent, innovate, design and fabricate. There are no teachers in the exploratory method of science education, but highly experienced guides who explore along with the students the basic concepts in science through carefully designed activities (INSA, 2001).

Arvind Gupta led a movement in science education by enabling children experience the connection between science and life through small science activities and construction of toys from locally available materials. *Anveshika*, is another initiative of Indian Association of Physics Teachers that creates centers across India in schools and colleges where students and teachers can learn experiment-based physics and try out their own ideas. They organise interaction sessions with students, short and long term teacher-training programmes; develop new teaching demonstrations and other activities. The Agastya International Foundation, a non-profit organisation, whose mission is to develop scientific inquiry for economically disadvantaged children and government school teachers, has created 125 Mobile Science Vans which take science education to the village doorstep, 45 Science Centers for disadvantaged children, 260 Night Village Schools, and 108 science laboratories.

Similar thrust to inquiry-based science education has been laid by Homi Bhabha Centre of Science Education. They have developed 'Small Science' textbook series for elementary grades.[1] Various organisations like National Institute of Science Communication and Information Resources (NISCAIR), and Vigyan Prasar have been established by the Government of India for the sole purpose of encouraging science inquiry. Despite such variegated endeavors spread across the entire country, it remains a fact that the inquiry-based science education (IBSE, henceforth) has not been taken up in science classrooms (Correia et al., 2014).

National science academies— National Academy of Science (NASI), Indian Science Academy (ISA), Indian National Science Academy (INSA)— have all recognised the need to amend the ways of science teaching- learning at school level which directly influences science education at undergraduate and post-graduate levels. The National Curriculum Framework (2005) acknowledges the 'product' obsession of school science and has recommended a move towards weakening of disciplinary boundaries and linking school knowledge with learners' context as the avowed goals of school science education. Observer Research Foundation's recent report on state of science education in India clearly indicates an urgent need to support science education at primary and secondary levels as our states are faring much below average score in Programme for International Student Assessment (PISA) educational surveys (Correia et al., 2014). Figure 1 expresses a nuanced version of

problems associated with science education in Indian educational landscape, thus, reinforcing the need for a closer investigation of the ways in which primary school science is being practiced in the classrooms. The particular focus of this study is teaching of environmental studies in primary classrooms.

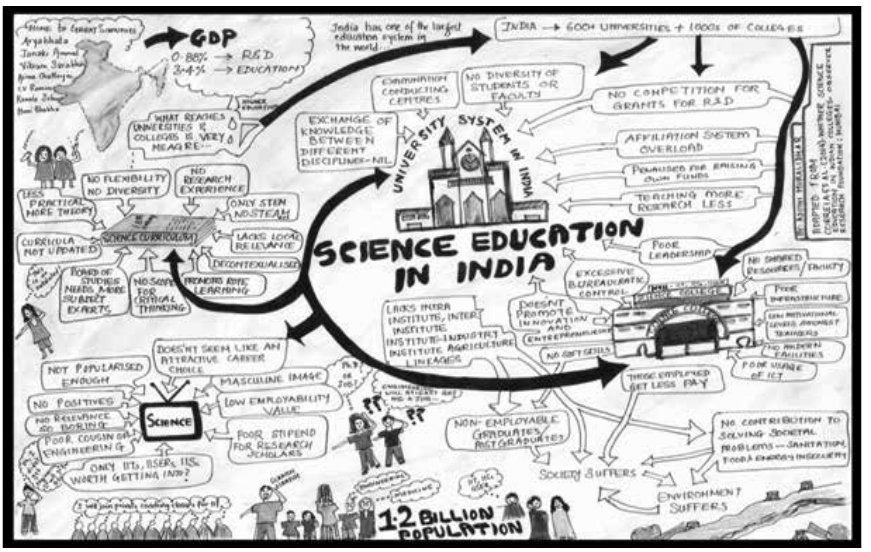

Figure 1: State of science education in India

Source: www.thealternative.in/society/how-do-we-improve-the-state-of-science-education-in-india- image

Inquiry-based Science Curricula

Inquiry-based curricula provide "context in which students can learn to reason scientifically" (Chinn, 2002). BouJaoude (2002) developed an analytical framework to analyse inquiry–based science curriculum. The framework comprised four aspects—knowledge of science, investigative nature of science, science as a way of thinking, and interaction of science, technology, and society. Essential features of inquiry-based classroom science include engaging students in scientifically oriented questions; gathering, organising, and analysing data; formulating explanations from evidence to address scientifically-oriented questions; evaluating their explanations in light of alternative explanations; and communicating and justifying their explanations; best promote students' science learning (NRC, 2000).

Position Paper on Teaching of Science Identifies the Following as Goals of Science Teaching at Primary Level

i) To nurture the curiosity of the child about the world (natural environment, artefacts and people), ii) to have the child engage in exploratory hands on activities to acquire the basic cognitive and psychomotor skills through observation, classification, finding patterns and relationships, iii) to emphasise design and fabrication, estimation and measurement as a prelude to development of technological and quantitative skills of later stages (NCERT, 2006).

Learning Indicators of Environmental Studies at Primary Level (NCERT, 2014, p.134) are Stated as Follows

1. Observation and Reporting — Explores, shares, narrates and draws, picture-reading, makes pictures, collects and records information, tables and maps.
2. Discussion — Listens, talks, expresses opinion, discovers.
3. Expression — Expresses through gestures/body movements, expresses verbally, expresses through drawing/writing/ sculpting, expresses through creative writing.
4. Explanation–Reasoning, makes logical connections, describes events/situations, formulates one's own reasoning's, makes simple gestures, thinks critically, and makes logical connections.
5. Classification — Identifies objects-based on observable features, identifies similarities and differences in objects, sorts/groups objects based on observable features. Compares objects and classifies them based on physical features.
6. Questioning — Expresses curiosity, asks questions, raises critical questions, frames questions.
7. Analysis — Defines situations/events, identifies/predicts possible causes of any event/situation, makes hypotheses and inferences.
8. Experimentation (Hands-on activities) — Improvises, makes simple things and performs simple experiments.
9. Concern for Justice and Equality — Sensitivity towards the disadvantaged or people with disability, shows concern for environment.
10. Cooperation — Takes responsibilities and takes initiatives, shares and works together with empathy.

Following the guidelines of *National Curriculum Framework* (2005), textbooks have been revised to provide requisite opportunities to learn inquiry for students. It is assumed that teachers using these textbooks will make inquiry-based teaching a central component of their pedagogical practices. However, research indicates that even when using inquiry-based science curriculum materials, elementary teachers may not always effectively engage students in science as inquiry (Forbes & Davis, 2010; Appleton, 2002; Pine et al., 2006). Furthermore, with the recommendations of NCF (2005), an assessment practice in India has been revised. Continuous and Comprehensive Evaluation is implemented in all the schools managed by Central Board of Secondary Education (CBSE) since 2009 which suggests a minimalistic use of content-based paper-pencil tests and encourages teachers to use diverse and authentic ways of student assessment. However, Nawani (2013) notes that school-based assessment practices are still hitched onto behaviourist traditional forms of content-based paper and pencil tests.

Research Questions

This study examines the ways in which inquiry-based science curriculum encoded in textbooks is being transacted in real-time classrooms. The study attempted to find answers to the research questions.

- What are the philosophical and practical conceptions of inquiry in science classrooms?
- What are the factors and conditions, internal or external to educational settings, which may impede or facilitate inquiry-based science education?
- How is science inquiry mediated through instructional discourse?
- What are the perceived gaps between inquiry-based science curriculum and its classroom transaction?

Method

Setting and Participants

The study adopted a multiple case-study design (Holliday, 2007) to understand pedagogical processes associated with teaching of inquiry-oriented environmental studies curriculum[2]. Three teachers, (referred as Teacher A, B and C in this study), teaching in three different schools, run by Government of Delhi, voluntarily

participated in the study. Table 1 describes the professional profiles of these teachers. Purpose of the study was communicated to all the teachers and their school authorities. These schools were part of the large sample of schools to which pre-service teachers studying in Bachelor of Elementary Education, University of Delhi visited for internship purposes. Purposive sampling of the schools was conducted due to ease of access in these schools owing to researcher's positioning as a teacher educator, visiting these schools regularly for mentoring of pre-service teachers.

Table 1

Professional Profiles of Teachers Participating in the Study

Teacher	School	Teaching Experience	Class Strength	Other Responsibilities
A	Senior Secondary	10 years in the same school	Varied between 40-70	Assisting the supervisory head of the primary wing of the school
B	Primary	5 years in this school and 2 years in a private school	Varied between 30-49	Organising collaboration among other teachers teaching Grade 3
C	Primary	3 years in this school and 1 year in a private school	Varied between 30-57	None

Data Sources

The teachers included in the study taught all the subjects to the students of Grade III as primary classrooms in India adopt an integrated approach to teaching-learning. Classroom observations constituted that part of their day when they were teaching environmental studies. A total of 24 hours of classroom observations, eight hours per teacher, constituted the data being reported in this paper. Along with this, teachers were interviewed (total 8 hours) using semi-structured questionnaire to examine their pedagogical planning, perceptions of scientific inquiry, views about changes in textbooks, their self-efficacy to conduct inquiry and infrastructural support required for conducting inquiry. Three focussed-group discussions were conducted with students to identify the ways in which they perceive inquiry and to draw out their experiences associated with inquiry-based teaching, if any.

Data Analysis

Inquiry is understood as not only a 'hands-on' approach but also as 'minds-on' approach to science in this study. The purview of inquiry adopted in this study entails hands-on activities; open-ended questions, surveys, teacher-led demonstrations, whole-class discussions, textbooks, interactive digital material, etc. Inquiry is interpreted as stimulation of curiosity among children to enable them to engage in scientific processes of reasoning out, observation, critical analysis of data, communication, etc.

Keeping this view of inquiry under consideration, the present study used thematic data analysis to allocate data into categories or themes, which emerged from the data itself, as per its relatedness to various themes.

Findings

Although inquiry offers compelling opportunities for science learning, it emerged from the study that there are many challenges to the successful implementation of inquiry-based learning. The challenges are described in the subsequent paras.

- *Non-synchronisation between inquiry-oriented curricula and assessment practices:* Teachers included in the study opined that inquiry is incorporated in textbooks but not in assessment processes which are still rooted in traditional content-based paper-pencil tests. Therefore, teacher A suggested that she "won't take a risk of spending time in inquiry which may hamper student achievement". Also, teaching of science was somehow correlated by the teachers with students' taking up of entrance examinations for entry to higher educational institutes of medical and engineering professions which often includes the curriculum of both classes XI and XII. In teacher B's opinion, "*Science ka content yaad karne ki aadat nahin hogi to aage kya karenge, aage entrance bhi to deni hoti hai*". Thus, there existed a covert focus on rote memorisation of scientific content, receding inquiry-based classroom practices.
- *Conception of science and science teaching:* Teachers seemed to be adhering to John Locke's conception of *tabula rasa*, thus, equating science with a dossier of information and facts which is to be parceled from an expert to novice. Teacher B argued, "*hume bhi to aise hi padhyi gai thi science"*, suggesting that they themselves had been taught science through lecture

method which has reaped gains in terms of professional growth. Therefore, an affinity towards lecture method emerged owing to teachers' personal belief in its benefits for students' outcomes and academic growth. They argued that when compared to lecturing, teaching science through inquiry takes a lot of instructional time which could have been fruitfully utilised in covering the course outline as prescribed in the syllabus.

- *Accountability pressures:* Teachers argued that instructional time is considered to be well spent by school administrators and parents if it is used in direct lecturing. The 'additional' time needed to engage in inquiry is perceived as less efficient when compared with lecturing about science concepts. Thus, accountability pressures motivated them to focus on scientific content more than the processes entailed in scientific inquiry.
- *Perceiving inquiry as elitist:* Teachers suggested that inquiry is an elitist practice as it involves playing around with the materials. To them inquiry-based science teaching can only be conducted in science laboratories requiring huge and costly paraphernalia. All the more, inquiry-based science practices were linked to students' socio-economic backgrounds and their possible future prospects. The following interview transcript with Teacher C elaborates this view further.

T (Teacher): *Madam, ye sab in bachon ke liye nahin hai...*

Rr (Researcher): *Ye sab kya?*[3]

T : *Ye inquiry...inhe koi scientist nahin banana... inhe to rickshaw wala hi banana hai...uske liye kaun si inquiry chahiye... ye to un bachon ke liye hai jo bade public schoolon mein jate hain jinko age chalkar scientist banana hai.... (pause)...unnnn...aur saman kahan se laoge aap bataiye* (This inquiry...these children will not grow up to become scientists, rather they will become rickshaw pullers only.... which inquiry is required for the profession of rikshaw pulling, tell me... all this is for students who go to big public schools and may grow up to become scientists in the future...unnnn..... (pause)...from where will we get stuff for inquiry-based activities?)

Rr : *Aapko kya lagta hai saman ke bina inquiry nahin ho sakti* ?

T : *batao na kaun sa experiment kar sakte ho?*

Rr : *Maine kitab dekhi thi...usme kuch surveys, discussions, sinking-floating jaise experiments diye the...kya nahin ho sakte*? (I have seen some forms of surveys, discussions, sinking-floating

experiments were given in the textbook… can they not be done?)

T : *Mushkil hai….ye tik ke to baithte nahin hain aur (emphasis in tone) kya hamein koi assistant mila hai yahan* (It seems difficult…. these students do not have etiquettes to sit properly in classrooms… and have we got any assistant to help us out?)

Rr : *acha, assistant mile to phir…*(Ok, if you get an assistant then…)

T : (irritated sound) *dekhenge tab…*(We will see then…)

It emerges that although teachers believed that they are engaged in inquiry-based science education since they voluntarily participated in the study yet they lacked confidence in conducting inquiry. They assumed scientific inquiry to be related to one's socio-economic backgrounds, and particular professions of science only. Another constraint in carrying out inquiry-based science education was their perception that scientific inquiry demands lots of manpower and infrastructural resources.

Closing Remarks

"The integration of theoretical knowledge and its application with the associated skills is at the heart of a qualitative change of science education at the schooling stages" (APEID, 1991, p. 62). This study suggests that in order to bring out this change in reality it is crucial to deal with the challenges faced by teachers in school contexts because teachers are the real crusaders of change. Teachers need to overcome their transmissionist views of teaching-learning of science to accommodate progressive and constructivist views of teaching science. To facilitate attitudinal changes in teachers, it is crucial that school provides adequate resources— infrastructure, pedagogical content knowledge, time— to teachers so that they can work collaboratively and creatively to translate inquiry-based science curriculum into practice.

Appendix 1

This is an excerpt from the semi-structured interview conducted with Teacher A in the initial phases of the study.

Rr : What do you understand by scientific inquiry?

TA : It is about asking questions, doing activities, relating their real lives to school science

Rr : Who is supposed to do all this… the points you have mentioned as scientific inquiry?

TA : Teacher, obviously,...I mean...you can't expect these small children to perform scientific activities....

Rr : So, teacher is the key actor of inquiry... right?

TA : No, I think...*bache bhi kuch kuch to kar hi sakte hain...* (Children can also do certain things)

Rr : *Jaise ki....*? (Like what?)

TA : Simple stuff like sink-float, classification, etc..

It emerged that the teacher ostensibly believed in scientific inquiry and envisioned an active role of learners in the IBSE.

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Effects of Private Tuition, Time Allocation and Perceived Difficulty on Achievement in Mathematics of Secondary School Boys and Girls in Kerala

ABDUL GAFOOR K.* AND SARABI M. K.**

ABSTRACT

This study examines the effect of gender, perceived difficulty, time allocation and private tuition on achievement in mathematics among secondary school students. A total of 988 students in grade nine from government and government-aided schools of Malappuram district of Kerala participated in the study. They completed a questionnaire on Mathematics Learning, and a grade-appropriate test of achievement. Results showed that whereas achievement in mathematics does not vary by gender, increase in perceived difficulty of mathematics adversely affects achievement. Students devoting less time on learning achieve significantly less. Private tuition is found to have positive impact on achievement in mathematics, especially of girls perceiving mathematics as highly difficult and among students allotting moderate time on learning mathematics at home. Even students perceiving high difficulty achieve better with moderate to high time allocation. The study suggested the need for putting efforts by students, teachers, parents and administrators to enhance the quality of students' learning in mathematics.

Introduction

Achievement in mathematics is known to be influenced by a number of personal, familial, and instructional factors. Many studies also

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report for gender gap in mathematics achievement. Hyde (2016) states that males and females are quite similar on most, but not all, psychological variables. Many studies have reported a lead of boys in mathematics test scores (Dickerson, McIntosh and Valente, 2015; Campbell and Beaudry, 1998); in mathematical reasoning ability (Benbow and Stanley, 1980); small but stable mean differences in senior secondary mathematics (Reilly, Neumann, and Andrews, 2015); and in measures of spatial visualisation, and high school mathematics (Feingold,1988).

However, there are reasons to believe that gender difference in mathematics performance is not generalisable across achievement levels and across mathematics tasks. Differences favouring males are reported in many studies (Reilly, Neumann and Andrews, 2015; Fan, Chen and Matsumoto, 1997; Stoet and Geary, 2012; Feingold, 1988). Though female and male do not differ in math calculation, geometric concepts, basic math concepts, and addition, males perform relatively better on complex math problems (Stewart, Root, Koriakin, Choi, Luria, Bray, and Courville, 2016) and advantage of males on this count seems to increase with age (Hyde, Fennema, and Lamon, 1990; Bharadwaj, Giorgi, Hansen, and Neilson, 2016). However, studies that reject the existence of gender gap are also available (Lindberg, Hyde, Petersen and Linn, 2010; Saritas and Akdemir, 2009; Hyde, Lindberg, Linn, Ellis and Williams, 2008; Chaman, 2014; Choudhury and Das, 2012), even from South Indian samples consisting of students from high schools of Kerala that report higher mathematics anxiety for girls (Venkatesh and Karimi, 2010). Performance on none of the 11 mathematics tasks in elementary schools demonstrated gender based differences among upper primary students of Kerala (Gafoor, 2011) and in elementary mathematics in general elsewhere in India (Wu, Goldschmidt, Boscardin and Azam, 2007). However, even studies that see stable female advantage in school marks reports such advantage as smallest for mathematics courses (Voyer and Voyer, 2014). Therefore, gender differences in maths achievement call for further attention in research.

Perceived difficulty and lack of confidence are important reasons for students not continuing with mathematics (Brown, Brown and Bibby, 2008) and their poor mathematics achievement. Mathematics self-concept had important direct effects on the boys' mathematics achievement, but had little effect on the girls' achievement (Campbell and Beaudry, 1998). Some studies state

that girls are more likely to report that they dislike mathematics or find mathematics difficult (Goetz, Bieg, Ludtke, Pekrun and Hall, 2013; Bharadwaj, Giorgi, Hansen and Neilson, 2016); yet others (Guo, Marsh, Parker, Morin and Yeung, 2015) find out that girls tend to have higher mathematics achievement and educational aspirations despite boys and girls having similar levels of math self-concept and values. Taking into account that in developing countries like India, self-efficacy beliefs of secondary students continues to be influenced more by social and domestic factors than personal experience and mastery, and especially so in boys (Gafoor and Ashraf, 2012), and that elsewhere also direct and indirect influences on achievement from the psychological constructs is more for females (Ethington, 1992), how perception of difficulty in maths impacts mathematics achievement of boys and girls in Kerala requires further investigation.

Time spent on learning mathematics at home affects student achievement (Young and Mundial, 1996) and is positively correlated with higher achievement for almost all students (Dunleavy, Willms, Milton and Friesen, 2012; Grave, 2011; Stinebrickner and Stinebrickner, 2008), after school tutoring adds to time on learning. Tutoring in academic subjects is provided for a fee and takes place outside school hours (Bray and Lykins, 2012). Before and after school and weekend programmes had a positive effect on students' academic motivation. However, there was no evidence of effect of tutoring on achievement (Kidron and Lindsay, 2014). In India, though private tutoring is prevalent at all levels of education, it is widespread at the level of secondary education and a higher percentage of boys attend private tutoring than girls. And, among Indian states, Kerala has the highest percentage of students going for private tuition at secondary level irrespective of locale (Sujatha, 2014). While a positive effect of private tutoring on private and government school students is reported at elementary school level on Asian samples (Aslam and Atherton, 2012; Suleman and Hussain, 2013) and more specifically on mathematics scores of Indian samples (Dongre and Tewary, 2015); evidence of effect of private tuition at the secondary levels are mostly anecdotal (Azam, 2016). Tuition is more beneficial for students belonging to low achievement group, and having lower learning levels (Dongre and Tewary, 2014) including in Kerala (Gafoor and Sunnummel, 2007). It is in this context, this study aimed to identify interaction effect of perceived difficulty, time allocation and private tuition on achievement in mathematics among boys and girls at secondary level.

Research Questions

The study attempted to answer the following questions:

- Is achievement in mathematics affected by gender and perceived difficulty?
- Does achievement in mathematics increase by time allocation and private tuition? If so, does time allocation alone and along with gender modify the effect of perceived difficulty on achievement in mathematics?
- Does private tuition alone and along with gender modify the effect of perceived difficulty on achievement in mathematics?

Method

Descriptive Survey procedure comprising questionnaire and testing, and statistical analyses viz. t-test, and multi-way ANOVA were employed.

Participants

There were 988 participants, Class IX students randomly selected from 12 government and eight aided schools from both urban and rural area of Malappuram district of Kerala, India. Among 988 Students, 408 students did attend private tuition and remaining 580 students did not go for private tuition in mathematics. Only 85 students perceived mathematics as easy, 316 as moderately difficult and 587 students as a highly difficult subject. Around 68 students allotted high time on learning whereas 806 students allotted moderate time on learning mathematics at home. Number of students' allotting less time for learning mathematics at home was 114.

Research Instruments and Procedure

Information on private tuition, time allocation and perceived difficulty were obtained through a questionnaire. Students marked the daily sessions they were allotting for learning mathematics on working days (morning, evening and night) and on holidays (morning, daytime, evening and night) separately and were accordingly categorised into less time allotting (if they spend only one session per week), moderate time allotting (2–4 sessions per week) and high time allotting (5–7 sessions per week). Likewise students' allocation of out-of-school hours on private tuition on both school days and holidays were obtained and identified as No

private tuition and Tuition Groups. Groups perceiving maths as easy, moderately or highly difficult were identified on the basis of students' self-rating of feeling of difficulty of learning mathematics. The second instrument used, Test on Achievement in Mathematics for Grade 9 (Mumthas, 2016), was a test with 60 multiple-choice items for measuring achievement in mathematics among secondary school students in Kerala. It contained items on concepts in class lower than 9, it tested achievement of mathematics concepts up to Class IX, on which mean score was 31.59 (SD=10.46).

Results and Discussion

Achievement in Mathematics by Gender, Perceived Difficulty, Time allocation and Private Tuition.

Table 1 shows the results when achievement in mathematics of students were compared by gender, perceived difficulty (easy, moderately or highly difficult), time allocation (less, moderate or high time on learning) and private tuition (Private tuition or No tuition).

Table 1

Analyses of Variance of Achievement in Mathematics by Gender, Perceived Difficulty, Time allocation and Private Tuition

Factor	Gender	N	Mean	SD	f (df=)
Gender	Boys	431	31.00	10.13	2.44 (1, 986)
	Girls	557	32.05	10.69	
Perceived Difficulty	Easy	85	37.40	12.89	24.48** (2,987)
	Moderate	316	33.06	10.77	
	High	587	29.96	9.46	
Time Allocation	Less	114	28.41	10.30	7.47** (2,985)
	Moderate	806	31.83	10.39	
	High	68	34.06	10.61	
Private Tuition	No Private Tuition	580	30.83	10.76	7.50** (1, 986)
	Private Tuition	408	32.68	9.94	

Note: **p<.01

Achievement in mathematics did not vary significantly by gender, but by perceived difficulty in mathematics; time allotted for learning mathematics and private tuition. There was a significant but small effect (η^2= .014) of perceived difficulty on achievement in

Mathematics. Students who perceived mathematics as easy achieved significantly higher than students who perceived it as moderately difficult (t=3.16, p<.01) or highly difficult (t=6.44, p<.01); and students who perceived mathematics as moderately difficult achieved significantly higher than students who perceived it as highly difficult (t= 4.46, p<.01). While the effects of shift in perception of difficulty of mathematics from easy to moderate (Cohen's *d*=0.38) or from moderate to high (Cohen's *d*= 0.47) were significant but small on mathematics achievement, shift in perception of difficulty in mathematics from easy to highly difficult had large effect (Cohen's *d*= 1.52).

There was a significant but small effect (η^2= .047) of time allocation on achievement. Students who allotted less time on learning achieved significantly less, than students who allotted high time (t= 3.51, p<.01) and, than students who allotted moderate time (t=3.32, p<.01). While increase in time allocation from less to high had moderate effect (Cohen's *d*= 0.54) on achievement in mathematics; increase in time allocation from less to moderate had significant but small effect (Cohen's *d*=0.33). Achievement in mathematics did not differ significantly due to moderate or high time allotted by the students at home (t=1.66, p>.05).

In mathematics, students who received private tuition achieved significantly higher than those without private tuition (p<.01). Effect of private tuition on achievement in mathematics though significant was negligible (η^2= .007).

Two-way Interactions of Gender, Perceived Difficulty, Time allocation and Private Tuition on Achievement in Mathematics.

Interaction of the effect of gender with perceived difficulty, time allocation and private tuition on achievement in mathematics were studied using 2-way analysis of variance. Results are summarised in Table 2.

Table 2

Two-way ANOVAs of Achievement in Mathematics by Gender, with Perceived Difficulty, Time Allocation and Private Tuition

Model	Gender	Perceived difficulty	N	Mean	SD	f (df=)
Gender* Perceived Difficulty	Boys	Easy	48	35.15	12.51	12.79** (5, 982)
		Moderate	147	31.22	10.78	
		High	236	30.02	8.94	
	Girls	Easy	37	40.32	12.95	
		Moderate	169	34.66	10.53	
		High	351	29.92	9.81	

Gender * Time Allocation	Boys	Less	68	27.54	9.08	3.53* (5,982)
		Moderate	335	31.37	10.23	
		High	28	35	9.33	
	Girls	Less	46	29.70	11.88	
		Moderate	471	32.17	10.49	
		High	40	33.40	11.49	
Gender* Private Tuition	Boys	Private tuition	166	31.47	9.38	3.78* (3,984)
		No tuition	265	30.71	10.58	
	Girls	Private tuition	242	33.50	10.24	
		No tuition	315	30.93	10.92	

Note: *p<.05, **p<.01

Effect of Perceived Difficulty on Achievement in Mathematics by Gender

The observed parity between boys and girls in achievement in mathematics cannot be generalised across the three levels of perceived difficulty in mathematics. The interaction effect of gender and perceived difficulty on achievement in Mathematics was significant and of moderate size (η^2= .061). Girls who perceived moderate difficulty in mathematics had significantly higher achievement in mathematics than boys (t=2.86, p<.01). The effect of gender on achievement in mathematics of moderate difficulty perceiving students was small (Cohen's *d*=0.323) and in favour of girls. Similarly, achievement in mathematics of girls perceiving mathematics as easy was significantly higher than that of boys (t=1.97, p<.05). Among the students who perceived mathematics as easy, gender difference was significant and large (Cohen's d=1.04). However, gender difference was not observed among students who perceived mathematics as highly difficult (t=0.129, p>.05).

Effect of Time Allocation on Achievement in Mathematics by Gender

Table 2 shows that the effect of time allocation on achievement in mathematics varied across gender. There was significant gender difference in the influence of time allocation on mathematics achievement ($p<.05$). Interaction effect of gender and time allocation (less, moderate and high) was small ($\eta^2= .018$). Further simple main effect analysis for this interaction showed that time allocation had significant [$F (2, 428) = 6.53$, $p < .01$] but small effect ($\eta^2= 0.029$) on boys' achievement in mathematics; whereas girls' achievement was not significantly affected by the same [$F (2, 554) = 1.46$, $p>.05$].

Among boys, achievement in mathematics is significantly less for those who allotted less time than those who assigned moderate time on learning ($t=3.09$, $p<.01$) or those allotting high time on learning mathematics at home ($t=3.59$, $p<.01$). Achievement in mathematics was significantly greater for boys allotting higher time than boys allotting moderate time on learning ($t=1.96$, $p=.05$). Among boys, increase in time allocation from less to moderate (Cohen's d=0.38) or from moderate to high (Cohen's d= 0.36) had significant but small effect on their mathematics achievement; increase in time allocation from less to high has large effect on boys' achievement (Cohen's d= 0.82).

Effect of Private Tuition on Achievement in Mathematics by Gender

As per Table 2, the effect of private tuition on achievement in mathematics varied by gender. The interaction effect of gender and private tuition (with or without private tuition) on achievement though significant was small ($\eta^2= .011$). Achievement of boys in mathematics was not affected by private tuition ($t= 0.78$, $p>.05$). However, girls with private tuition achieved significantly higher than that of girls without private tuition ($p<.01$). Effect of private tuition on girl's mathematics achievement was small (Cohen's d=0.24).

First order interactions among perceived difficulty, time allocation and private tuition on impacting achievement in mathematics were studied using 2-way analyses of variance. Results are summarised in Table 3.

Table 3

Two-way ANOVAs of Achievement in Mathematics by Perceived Difficulty, Time Allocation and Private Tuition

Factors			N	Mean	SD	f (df=)
Perceived Difficulty *Time Allocation	Easy	Less	10	39.7	16.19	8.19** (8,979)
		Moderate	63	36.95	12.91	
		High	12	.37.83	10.37	
	Moderate	Less	25	31.08	11.01	
		Moderate	266	33.16	10.52	
		High	25	34.04	13.61	
	High	Less	79	26.14	7.91	
		Moderate	477	30.42	9.63	
		High	31	32.61	8.11	
Perceived difficulty * Private Tuition	Easy	Private tuition	48	38.35	12.36	10.89** (5,982)
		No Private tuition	37	36.16	13.61	
	Moderate	Private tuition	126	34.02	10.24	
		No Private tuition	190	32.43	11.08	
	High	Private tuition	234	30.79	8.62	
		No Private tuition	353	29.41	9.95	
Time Allocation* Private Tuition	Less	Private tuition	33	29.24	10.42	4.12** (5,982)
		No Private tuition	81	28.07	10.31	
	Moderate	Private tuition	338	32.81	9.98	
		No Private tuition	468	31.13	10.62	
	High	Private tuition	37	34.51	8.56	
		No Private tuition	31	33.52	12.77	

Note: **p<.01

Effect of Perceived Difficulty and Time Allocation on Achievement in Mathematics

Interaction effect of perceived difficulty and time allocation was significant and was observed to be of moderate size (η^2= .063). The students perceiving high difficulty in mathematics, time allocation had significant [F (2, 584) = 8.44, p < .01] but small effect (η^2= 0.028) on achievement in mathematics. However, mathematics achievement did not vary by time allocation neither among students who perceived mathematics as easy [F (2, 82) = 0.20, p > .05] nor among those who perceived it as moderately difficult [F (2, 313) = 0.54, p>.05]. Among students who perceived high difficulty in mathematics, the effect was significant (t= 3.79; p<.01) and large (Cohen's d= 0.812) when time allocation increased from less to high; whereas the effect was significant (t= 4.31, p<.01) but small (Cohen's *d*= 0.455) when time allocation increased from less to moderate. Nevertheless, among these students, assigning moderate or higher time did not make any significant difference in mathematics achievement (t=1.44, p>.05).

Effect of Private Tuition on Achievement by Perceived Difficulty in Mathematics

The effect of private tuition on achievement in mathematics is modified by students' perceived difficulty in mathematics. Interaction effect of perceived difficulty and private tuition on mathematics achievement is significant (p<.01) but small (η^2= 0.053). Influence of private tuition on mathematics achievement is observed only for students who perceive mathematics as highly difficult. Among them too, effect of private tuition on achievement in mathematics is significant (t=1.78, p<.05) but negligible (Cohen's *d=0.146*). And, mathematics achievement does not vary by private tuition neither among students who perceive mathematics as easy (t=0.77, p>.05) nor among those who perceive it as moderately difficult (t=1.31, p>.05).

Effect of Private Tuition on Achievement in Mathematics by Time Allocation

The effect of private tuition on achievement in mathematics varied by the students' time allocation. Interaction effect of private tuition was significant (p<.01) but small (η^2= .021). Influence of private tuition on mathematics achievement is observed only among students who allotted moderate time in learning mathematics.

There also, effect of private tuition on achievement in mathematics was significant (t=2.29, p<.01) but negligible (Cohen's *d*=0.162). Otherwise, mathematics achievement did not vary by private tuition neither among students who assigned less time (t=0.55, p>.05) nor among those who devoted high time (t=0.38, p>.05).

Interaction Effect of Gender, Perceived Difficulty and Private Tuition on Achievement in Mathematics

The interaction effect of gender, perceived difficulty, and private tuition on achievement in mathematics was significant (F= 6.77, df= 11, 976, p<.01) with medium effect size (η^2= .071). Among girls who perceived high difficulty, effect of private tuition was significant (t= 2.75, p<.01) but small (Cohen's *d*=0.294). However, private tuition did not significantly add to achievement in mathematics of girl students perceiving mathematics as either easy (t=0.68, p>.05) or moderately difficult (t=0.23, p>.05). On the other hand, private tuition did not influence boys' achievement at all, whether their perception of mathematics is as easy (t=0.44, p>.05), moderately difficult (t=1.29, p>.05) or highly difficult (t=0.82, p>.05).

Interaction Effect of Gender, Perceived Difficulty and Time Allocation on Achievement in Mathematics

Interaction effect of gender, perceived difficulty and time allocation was significant (F=5.31, df=17, 970, p<.01) with medium effect size (η^2= .085). Further analysis on this interaction showed that among students perceiving high difficulty in mathematics, main effect of time allocation was significant with medium effect size both in boys (F [2, 233] = 6.29, p<.01; η^2= 0.02) and girls (F [2, 348] = 3.18, p<.01; η^2=0.02). However, time allocation had no effect on achievement in mathematics neither of boys perceiving mathematics as moderately difficult [F (2, 144) = 1.85, p>.05] or as easy [F (2, 45) = 0.09, p>.05] nor of girls perceiving mathematics as moderately difficult (F [2,166] = 0.73, p>.05) or as easy (F [2, 34] = 1.19, p>.05).

Among high difficulty perceiving boys, though effect of increase in time allocation from less to moderate on achievement in Mathematics was significant (t=3.3, p<.01) but small (Cohen's *d*=0.495); effect of increase in time allocation from less to high time was significant (t= 3.32, p<.01) and large (Cohen's *d*= 1.05). However, whether those who devoted moderate or high time on learning mathematics at home, there was no significant difference

between achievement in mathematics of high difficulty perceiving boys (t=1.65, p>.05).

Among high difficulty perceiving girls also, though effect of increase of time allocation from less to high was significant (t= 2.07, p<.01) and large (Cohen's *d*=1.05); effect of increase of time allocation from less to moderate on achievement in Mathematics was significant (t=2.78, p<.01) but small (Cohen's *d*=0.44). Like the boys, whether girls allotted moderate or high time on learning mathematics at home, there was no significant difference between achievement in mathematics of high difficulty perceiving girls (t=0.34, p>.05).

Conclusion and Implications

Many of the findings of the present study corroborate findings of earlier studies, at times modifying the previous observations found especially from culturally and educationally dissimilar samples. This study has helped to fine-tune the understanding on the interaction effects of gender, self-beliefs, time allocation and private tuition on mathematics scores among secondary school students.

Achievement in Mathematics Vary by Perceived Difficulty, Time Allocation and Private Tuition

In general, students who feel mathematics as easy or moderately difficult, and those allotting high time on it achieve above average; whereas those devoting less time and those feeling it as highly difficult achieve below average. Gender and allocating moderate time on mathematics learning do not predispose students to high or low achievement in mathematics per se. Achievement decreases with increase in perceived difficulty in mathematics from easy through moderate to high difficulty. Students who allot less time on learning mathematics at home achieve significantly less than students who allocate moderate or high time. Seemingly, achievement in mathematics is enhanced by private tuition.

No Main Effect of Gender on Achievement is Observed, but Girls with Private Tuition Achieve Strikingly Higher Despite Perceiving Mathematics as Highly Difficult

The finding of this study that achievement in mathematics does not vary by gender among secondary school students is similar to the findings concerning upper primary students of Kerala (Gafoor, 2011) and at the elementary level elsewhere in India

(Wu, Goldschmidt, Boscardin, and Azam, 2007). The study further suggests that advantage for boys in mathematics related performance in secondary and post-secondary stages often reported from the West (Dickerson, McIntosh and Valente, 2015; Campbell and Beaudry, 1998; Benbow and Stanley, 1980; Reilly, Neumann, and Andrews, 2015; Fan, Chen and Matsumoto, 1997; Stoet and Geary, 2012; Feingold, 1988) needs to be applied with caution to secondary students in India. The study also reveals that achievement in mathematics of boys is not affected by private tuition. However, girls with private tuition achieve significantly higher than that of girls without private tuition.

This study corroborates the beneficial effects of private tuition for students belonging to lower learning levels (Dongre and Tewary, 2014; Gafoor and Sunnummel, 2007) but generally rejects the often projected benefits from private tuition for students at secondary level. Private tuition has influence on achievement in mathematics of high difficulty perceiving girls only. Private tuition does not significantly add to achievement in mathematics of girl students who believe maths as either easy or moderately difficult. Regardless of perceived difficulty, private tuition does not influence achievement of boys. There is a small effect of private tuition on girl's mathematics achievement, and this effect though small is profitable especially for girls who perceive high difficulty in mathematics learning.

Influence of Private Tuition on Achievement is Observed Only among Students who Allot Moderate Time on Learning Mathematics at Home

Private tuition had negligible though significant value-addition for students who perceive high difficulty in mathematics learning, or for those allotting moderate time on learning mathematics at home. The students who assigned moderate time, with private tuition, had significantly higher achievement in mathematics. However, mathematics achievement did not vary with private tuition neither among students who allotted less time nor among those who devoted high time in learning mathematics at home.

Time Allocation has Significant Effect on Boys' Achievement in Mathematics, but Not of Girls

Time allocation in case of boys affected their achievement, but not for girls. However, girls tended to allot more time on learning

mathematics than boys. Boys who allot less time achieve significantly less in mathematics when compared to boys allotting moderate or high time in learning mathematics. Girls perceiving easy or moderate difficulty in mathematics achieve higher than boys with same level of difficulty. Irrespective of gender, students perceiving high difficulty achieve higher if they allot moderate or high time in learning.

The study shows that parents need to be made aware about the effects of private tuition and time allocation. Schools and teachers can support parents in this regard by guiding and counselling students as well as parents on how the students perceive mathematics and what such perception implies for students' progress. Organising and sending student for private tuition and providing additional support in school have to be based on a clear analysis of the student perception of difficulty and learning time in mathematics. Schools must focus on students' attainment of basic concepts and skills in mathematics from early grades on. The importance of self-beliefs, time allocation, and need for private tuition beyond school hours are all indicative for students, parents, teachers and administrators that there is no shortcut to quality learning other than putting every stakeholder' effort together in a concerted manner to achieve the set goal of students' learning.

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Rethinking Curriculum A Comparative Study of Pre-service Elementary Teacher Education Curriculum

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ABSTRACT

This paper presents the results of a comparative study of revised pre-service teacher education curricula at the elementary stage of three states, namely Delhi, Chhattisgarh and Madhya Pradesh. The curriculum of the Diploma in Elementary Education (D.El.Ed) of all the states have been revised keeping in mind the principles and guidelines of National Curriculum Framework for Teacher Education (NCFTE 2009) developed by National Council of Teacher Education (NCTE). This study makes a modest attempt to examine the variations within teacher education curricula of three states. Through a method of documentary analysis, the present research examined the curricula of different states in terms of their course content, aims and objectives and the marks weightage given to each paper against NCFTE 2009. Results indicated that all the three states have developed their curriculum keeping in mind the vision of NCFTE and have geared their course structure from the over-emphasis on theoretical learning into a combination of theory and practice. However, there are a few areas of concerns that need to be taken care of so as to prepare teachers who are reflective, competent and thinking professionals as envisaged by NCFTE 2009.

Keywords: *Elementary Education, Initial Teacher Education, Curriculum Structure, Professional Development.*

Introduction

Contemporary India is in a moment of history when elementary education has been declared as a fundamental right through an

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act of Parliament (*The Right of Children to Free and Compulsory Education Act 2009*; RTE 2009). This is also a time when we have a school curriculum framework (National Curriculum Framework, NCF 2005) which focusses on establishing the relationship between education and society and also on the issues of equity, diversity and quality education for all children. The NCF - 2005 brings to the forefront a changing society with shifts within school system and puts the learner at the centre stage of teaching-learning process. With the expansion of elementary education, the need for professional teacher education programmes has also grown because of the spatial and numerical expansion of schooling facilities at primary and elementary level. The RTE Act (2009) has implications to redesign courses for preparing teachers. The demand RTE Act places on the teachers are many fold: they have to effectively educate learners coming from diverse socio-economic-cultural backgrounds and arouse curiosity among them in the process of teaching and learning. Many of the students would be first generational learners requiring much emotional and intellectual guidance. A teacher now has to reach each and every child and for that purpose, s/he needs to be empowered through conceptual and pedagogical dimensions that are interwoven with socio-cultural-political issues. Finding oneself amidst a range of learners can overwhelm beginner teachers who are educated in a conventional teacher education programme, based on unrelated and fragmented course structures and incoherent curriculum design (Zeichner, 2006; Batra 2005; Feiman-Nemser, 2001).

The curricula of conventional pre-service teacher education are largely aggregates of courses rather than an integrated framework that helps future teachers in recognising a wide array of notions about children, their social, emotional and cultural contexts. A teacher may be aware of psychological or a sociological theory but does not know how to apply the same in a real social classroom situation. Studies reveal that there are no linkages between the content and processes of initial teacher education and the experiences that teacher encounter in classrooms (Dyer and Choksi, 2004). Researchers have argued that there is an intimate link between school curriculum and the preparation of teacher.It is widely recognised that the quality of teachers depends upon the quality of teacher education as it is the programme that helps in developing teacher's knowledge, skill set and dispositions. Hence, the initial education of teachers is considered to be the most significant phase

of teacher professional development. Pre-service teacher education provides a space where a change in the initial frames of reference, ideologies and thought process of student teachers can be made. From the experiences that are provided through the programme design and its curricula, student teachers develop ideas that will guide their future practices. There has been a growing realisation among the educators that education of teachers is not an end in itself. The education of teachers not only prepares future teachers but the processes involved in it affect schools and society at a wider level too. A need to strengthen the subject matter and pedagogical preparations is important so that both personal and professional development of teachers can be addressed.

Drawing from the above mentioned ambiguities that afflict the professional preparation system in our country, the Position Paper on Teacher Education (NCERT, 2005) offers a refreshing perspective on revitalising teacher education in India. The explicit recognition for equity, diversity and social justice has put an imperative to redesign courses for preparing teachers in terms of academic organisation, relevance, and developing professional repertories. The National Council of Teacher Education (NCTE), an apex body for curriculum designing and evaluation of teacher education in India, came out with *National Curriculum Framework for Teacher Education* (NCFTE) in 2009. This was in response to the growing need to change the teacher education curricula as a follow up to the school curriculum (NCF 2005). The NCFTE 2009 carried forward the new visualised role of a teacher as well as of the teacher education programmes as envisioned by the Position Paper on Teacher Education (NCERT, 2005). A few states have started reviewing the structural features of their teacher education programme in lieu with the framework provided by NCFTE.

Significance of the Study

The significance of the study lies in unfolding some of the specific curricula concerns that plague the preparation of elementary school teachers. Till now, there has been no serious discourse on issues concerning teacher education programmes, such as curricular areas and its mode of transaction, and comparing them with a broader framework. This study makes a modest attempt to investigate existing teacher education curricula with the aim to open a discourse on the subject. The NCFTE 2009 has provided space to the teachers to introspect, reflect on their own practices,

and become agents of change. The present study tries to examine and compare the pre-service curricula of few states in relation to the model syllabi developed by NCTE with the aim to understand the major shifts being proposed in the curricula by NCFTE, 2009.

National Curriculum Framework for Teacher Education 2009 (NCFTE)

The NCFTE 2009 has articulated major epistemological shifts in the way education of the teachers have been looked upon. The framework stresses on issues of diversity, gender and inclusive education as critical in preparing school teachers. It focusses on building perspective of student teachers on various social issues confronting contemporary India. By drawing inter linkages across various disciplines; the framework creates an informed understanding of education and its location in contemporary Indian society. The NCFTE views teachers as agents of social change and highlights the need and implications for innovation in pre-service teacher education through educational research. Its idea of teacher as a researcher can provide a more informed understanding of educational practice that are likely to impact the classroom. For the first time, a framework on teacher education provides a structure through curricula that attempts to build upon the agency of teachers as reflective practitioners. This can empower teachers and help them develop critical perspectives which in turn lead to their professional development.

Objectives of the Study

The objective was to study the pre-service teacher education curriculum at the elementary stage and to understand existing perspectives and changes proposed in the NCFTE, 2009.

The specific objectives of the study were to:

- Identify theoretical and conceptual thrusts that form the basis of pre-service elementary teacher education curriculum.
- Study in-depth the existing pre-service teacher education curriculum at the elementary level being followed in Delhi, Madhya Pradesh and Chattishgarh.
- Analyse the curricula changes of these states with respect to the NCFTE, 2009.

Methodology

The present study was essentially a desk review of the existing curricula and syllabi of the D.Ed/D.El.Ed programme in three states, namely Delhi, Madhya Pradesh (MP) and Chhattisgarh. These were studied with reference to the NCFTE, 2009 and the model syllabi of D.Ed proposed by NCTE. The study begins with a close reading of the NCFTE, 2009 to understand the structure of curricular areas proposed and their rationale. Thereafter, each of the three-state curriculum and specific syllabi offered by their respective SCERTs is examined against the NCFTE curricular areas. Each of these is then compared with reference to the model syllabi prepared by NCTE in the light of NCFTE, 2009. A broad comparison of the curricula areas is made which is followed by a detailed content analysis of the each of the courses offered under specific curricula areas. In order to arrive at a meaningful analysis, the aim of the courses, syllabi outline, weightage assigned and readings are studied in depth. Qualitative tables and charts are generated for each curricula area, as well as the specific course. The analysis undertaken and the interpretation of findings are presented in the study.

Delimitation

The present study is confined to study the pre-service elementary teacher education curriculum as a desk review. No attempt was made to observe and study its transaction in the field.

Teacher Education Programmes: Curricular Areas

The NCFTE, 2009 envisions teacher education as a holistic enterprise aimed at the development of the teacher's knowledge and understanding, repertoire of skills, positive attitudes, habits, values and the capacity to reflect. It suggests a vision for a carefully crafted curriculum design that draws upon theoretical and empirical knowledge as well as student teachers' experiential knowledge. The common core curriculum, for teacher education programmes suggested three broad curricular areas: (A) Foundations of Education, which include courses under three broad categories, namely Learner Studies, Contemporary Studies, and Educational Studies; (B) Curriculum and Pedagogic studies which includes courses under two broad categories, namely Curriculum Studies and Pedagogic Studies; and (C) School Internship.

Model Syllabi

The NCTE model syllabi have been developed upon the curricular areas articulated in the NCFTE, 2009. Henceforth, the NCTE model syllabi will be referred to as model syllabi. The model syllabi have been taken as a reference point for drawing comparisons between the D.Ed. curricula of MP, Chhattisgarh and Delhi. The curricula of all the three states were recently revised keeping in the light of the NCF - 2005 and to some extent the principles of teacher education as envisioned by NCFTE, 2009. The model syllabi depart in many ways from the existing initial teacher education curricula. The major aspects[1] of such departure are—

- The courses on foundations of education are located in the sociological, historical, economic, ecological, philosophical, cultural and political context and thought in education. Whereas the existing curriculum focusses largely on sociological and philosophical perspectives.
- The core components meant to engage learners with subject-content with the aim to revisit and reconstruct concepts and perspectives are integrated in the pedagogic courses.
- Pedagogic strategies are evolved with the engagement of the learner with theory of pedagogy and hands-on experience in understanding his/her context and processing of thinking and learning.
- The pedagogic courses are designed in the frame of broad disciplinary areas, such as Sciences, Social Sciences, Languages and Mathematics rather than individual school subjects.
- Theory courses are designed to enable inter-disciplinary engagement with theory in the light of personal experiences and social realities. They include in-built field-based units of study to enable permeable boundaries between theory and practice.
- The model syllabi provide opportunities for developing the self through drama, craft, music, self-development workshops along with a critical engagement with theoretical constructs of identity development.
- The foundation courses are designed to equip teachers with a grip over existing systemic issues in education. Focussing on

[1] These aspects are based on those presented in NCFTE, 2009, pp. 49

issues in the light of inter-disciplinary knowledge of philosophy, sociology, political science and psychology are likely to help learners to rise to the uncertainties of a learning environment and of the changing learner needs.

- Practicum courses are developed to build professional capacities and sensibilities: the ability to understand learners in context, evolve developmentally and contextually relevant pedagogies, re-arrange subject-matter to communicate effectively with learners, design and choose appropriate learning experiences activities, learn to observe and document, analyse, synthesise, interpret and reflect.

A Comparative Analysis of Courses of Study in the D.Ed Programmes

The curriculum of D.Ed is divided into three courses — foundational, pedagogical and practical (refer Table 1, 2, 3 and 4). The foundation courses seek to provide psychological, sociological and philosophical perspectives and aspects that are related with children's development and learning where as the pedagogical courses help a student-teacher in understanding the nature of different disciplines. The practicum courses provide the space to strengthen theory and practice through actual transaction in the field. The details of courses under Curricular Area A: Foundation of Education are described in the subsequent sections.

Curricular Area A: Foundation of Education

Learner Studies

Under the foundation area of learner studies, the model syllabi have two courses, namely Childhood and the Development of Children; and Cognition, Learning and the Socio-cultural Context. As the title of the course suggests, the model syllabi locates the learner and learning in the socio-cultural contexts. The Delhi syllabi have two courses under it, namely Child Development and Psychological Perspectives of Education. The MP syllabi has two courses, namely *बचपन और बाल विकास एवं सामाजिक, सांस्कृतिक परिप्रेक्ष्य में संज्ञान एवं अधिगम*. The Chhattisgarh curriculum has only one course: *बाल विकास और सीखना* in its first year devoted to this curricular area irrespective of two courses that other curriculum under this area offers.

Contemporary Studies

The model syllabi have two courses in this area: Contemporary Indian Society and Diversity, and Gender and Inclusive Education. The Chhattisgarh curriculum has two courses, namely School and Community, which includes various aspects of contemporary Indian society; and Education in contemporary world. The Delhi syllabus has course on Education and Society in its first year and Socio-philosophical Perspective of Education in its second year. The MP syllabi have two courses that deal with contemporary issues in Indian society and diversity, and Gender and Inclusive Education.

Educational Studies

The model syllabi have four courses in this area. These are Education, Society, Curriculum and Learners; School Culture, Leadership and Change; Towards Understanding the Self and Teacher Identity and School Culture. It may be pointed out here that out of these, two courses specifically focus on issues of teacher's personal and professional development. This aspect has been visualised crucial in development of professionalism in teachers. The Delhi D.Ed has two courses under the area of educational studies: School Leadership and Management; and Curriculum, Pedagogy and Evaluation in its second year only. In the first year, a course on educational technology has been placed that finds no space in the foundational courses of the curricula studied. The Chhattisgarh D.Ed has two courses in this area; one in each year focussing on philosophical perspectives in education with little attention to teacher's development. The MP curriculum has three courses similar to model syllabi in this area stressing on teacher's self development and school leadership and curriculum.

Curricular Area B: Curriculum and Pedagogic Studies

The curricular area B has three sub areas under it namely, Curriculum Studies, Pedagogic Studies, Assessment, and Evaluation Studies. Aspects of knowledge and school subject content are integrated into the pedagogic courses. Assessment and evaluation is also integrated in the courses on pedagogy. The model syllabi offer one separate course under curriculum studies that is proficiency in English. Only MP curriculum has a course with the same title in this area. The model syllabi also have a pedagogic course that is more generic in nature: pedagogy

across the curriculum. The aim of this course is to engage student-teachers with questions of pedagogic approach, theory and practice as they unfold within the classroom and in school settings. The Chhattisgarh and MP D.Ed do not have any generic course on pedagogy that cuts across subject areas. Although the Delhi syllabus offers a course combining curriculum, pedagogy and evaluation in its foundational area, the content focuses on different pedagogic approaches, such as experiential and joyful learning, activity and project method.

The model syllabi offers three compulsory courses in pedagogy, namely pedagogy across the curriculum, mathematics education for the primary school child and understanding language and early literacy in its first year and three optional course of pedagogy; one pedagogical course at the middle school level, namely pedagogy of language/mathematics/science/social science; pedagogy of EVS and English language. In comparison, the Delhi syllabus offers similar courses in both years except that in the second year it offers three courses at the middle school level: one language and two among the sciences, social sciences and mathematics. Instead of offering a generic course on pedagogy across the curriculum, the Delhi syllabus offers environment studies education in its first year and two separate optional courses: science and social science education in its second year. This will help student-teachers to engage the middle school level concepts of different subjects in greater detail and gain proficiency in teaching them.

The MP syllabus in contrast offers only two courses—mathematics and language with a special focus on pedagogy of Hindi in its first year and six pedagogical courses in its second year. This distribution of pedagogical courses looks skewed and would require student-teachers to work upon pedagogical courses mainly in its second year. The syllabus in its second year focusses on the EVS at primary level and second language (Urdu/Sanskrit/Marathi), sciences, social sciences, English and mathematics at middle school level. Similarly, the Chhattisgarh syllabus offers pedagogy of mathematics and language in its first year and five courses in its second year, namely pedagogy of mathematics, Hindi, English, Sanskrit and EVS. The curriculum does not offer any separate pedagogical course on science and social science education for the middle grades. The pedagogic studies constitute a major portion of the D.Ed curriculum of all states. Theoretical engagement with learner assessment has been integrated with courses in pedagogic

studies in all the syllabi. However, the outlook and approach differs considerably. Both MP and Chhattisgarh give preference to Hindi and English languages by making their pedagogical courses compulsory, at the same time, they give preference to the second language spoken in their state, such as MP opted for Marathi/ Sanskrit, Delhi opted for Urdu/Punjabi and Chhattisgarh for Sanskrit. Unlike Chhattisgarh and MP, Delhi and Model syllabi do not have a compulsory paper on Hindi in their syllabus.

Curricular Area C: School Internship

The curricular area C that is school internship constitutes the most functional part of teacher preparation. The model syllabi have school internship of 300 marks, 100 in the first year and 200 marks in the second year. The range of activities differs considerably during first year of internship: developing student profiles to resource material, visiting a learning centre, critically analysing texts. The second year is devoted to planning, teaching and reporting. In contrast, the Delhi and MP D.Ed has a school experience programme of 300 marks, 150 marks each year. The SEP has been divided into three phases. For both years, the first phase is devoted to planning and observing where the second and the third phase has been reserved for teaching in both Delhi and MP. Chhattisgarh curricula allocate 200 marks; 100 each year for its internship programme.

In all the states, School Internship (SI) forms an important component of the curriculum. The differences lie in the marks accorded to different component by each state. Both Model syllabi and Delhi assess SI internally whereas Chhattisgarh and MP follow internal and external evaluation that includes viva or oral examination and presentation. In MP, the school principal or the head also evaluate student teachers on certain areas. In comparison, Delhi has rotational supervisor and regular supervisor from the institution for evaluation. Overall, all states incorporate various components, such as micro teaching, portfolio assessment and textbook analysis in their SI. Delhi SI accords action research as an important aspect of student-teachers professional development and learning. In comparison, MP syllabus has assigned marks for report on field visit to innovative educational centres. Delhi internship places significance on the linkages between school and the community in the teaching-learning process as it has allocated marks for neighbourhood survey in its SI.

Practicum

The model syllabi have a unit of study that focusses on a 'critical study of ICTs and developing capacities' in the 'pedagogy across the curriculum' course. However, all three curricula have a full course on educational technology. Only Delhi curriculum has a course—educational technology in the curricular area A: foundations of education. This appears to be another major departure. The model syllabi accords a significant place to creative drama as an integral part of its practicum course. The MP, Chhattisgarh and Delhi curricula position visual, theatre and other forms under the art education course. The MP syllabus has a unit on regional art forms and folk songs of the state. Except Chhattisgarh, all syllabi have an elaborate course on work experience, emotional and physical well being of children. However, Delhi D.Ed does not address the issue of emotional health in its practicum. It is taken up as a separate unit in the foundation paper. The MP curriculum too has a course on work and education only in its Ist year.

Courses of Study: A Comparative Analysis of the Courses

Curricular Area-A: Foundations of Education

Learner Studies

Course in this broad category have been envisioned with the aim to introduce students to the study of childhood, child development and adolescence. The focus is on understanding children of different ages by interacting with them and observing them in diverse social, economic, and cultural contexts rather than through an exclusive focus on psychological theories of child development. A close study of the social construct of childhood and adolescence in contemporary India and understanding the development of children in diverse contexts are placed to understand the finer nuances of diversity in the classroom. In this, a major shift in the epistemological basis of learning is observed. Instead of focussing on the concept of educational psychology, the focus is on understanding processes of learning in children.

Thrust Areas of Individual Courses

Table 1 presents a comparison between different state curricula in terms of marks allocated; internal and external weightage and the title of the courses. As seen from the Table 1, the marks weight

age given by each state to this area is same except Chhattisgarh. This state offers only one course under learner studies. Irrespective of the total number of courses and marks assigned, the student contact hours, however, varies considerably from 65 to 140 hours. This can have a huge implication on the quality of student teacher's understanding of the area.

Table 1

Learner Studies

	Year	Maxi-mum Marks	External	Internal	Total	Student Contact Hours	Name of the Courses
Model Syllabi	Ist	100	50	20	200	100	Childhood and the development of children
			70				
			Practicum 30				
	IInd	100	50	20		100	Cognition, learning and the socio-cultural context
			70				
			Practicum 30				
Chhattis-garh	Ist	100	80	20	100	120	*बाल विकास और सीखना*
	IInd						
Madhya Pradesh	Ist	100	70	30	200	140	*बचपन और बाल विकास*
	IInd	100	70	30		120	*सामाजिक, सांस्कृतिक परिप्रेक्ष्य में संज्ञान एवं अधिगम*
Delhi	Ist	100	75	25	200	65	Child development
	IInd	100	75	25		65	Psychological perspectives on education

The model syllabi have placed two courses under this area, namely childhood and the development of children and cognition, learning and the socio-cultural context; one in each year. In the former course, the notion of childhood has been looked through the socio-political and cultural lens of poverty, globalisation, diversity, and adult culture. Students are expected to be made aware to the

construct of multiple childhoods with particular reference to the Indian context. It gives a different perspective towards development by stressing on physical, social, and emotional development and the influence of the processes of socialisation. The second year course specifically focusses on various theories on learning and cognition through different theories/perspectives. Units of study, such as play, language and communication, self and moral development help understand how different perspectives and theories contribute to an overall understanding of development and the child as a socio-cultural universal.

The M.P. syllabi, on the other hand, has two courses; one in each year. The first course *बचपन और बाल विकास* focusses on developmental psychology with special focus on factors affecting development such as emotional, social and physical. A whole unit is devoted on child socialisation with reference to globalisation and multiple childhoods in the Indian context. The second course stresses on educational psychology and draws from different traditions of learning. However, all this revision in the syllabus may go dissipate as the suggested readings for the papers in the end draws heavily from the earlier textbooks on child psychology. These textbooks fail to recognise the holistic view of child development which in turn may result in a failed attempt to rework on the syllabus that for instance tries to understand the notion of multiple childhoods and socialisation in the Indian context. Selective readings from different sources, readings from original source are seemingly absent and incomplete reference of readings by international/national authors are given.

The Chhattisgarh curricula have only one course in this area that makes the paper appears to be loaded with a lot of content on child psychology and learning. The paper has units on child rights and on thinkers, such as John Holt and Gijubhai. The notion of child development and of children's physical, emotional and moral development is covered in just two units. A unit on Piagetian and Vygotskian conception of development helps learners to develop a developmental perspective. Units, such as play and children with special needs as incorporated in the NCTE's model syllabi are included as well.

The Delhi programme has a paper on child development and has separate units on cognitive, physical, social and emotional development. The second course in the second year emphasises on inclusive education and language learning that try to address

issues of differently-abled children and first generational learners. However, locating the concept of learning within Indian context is missing from the course. The sub-unit on guidance and counselling focusses on developing a perspective towards different areas of guidance.

Conclusion

The model syllabi attempt to give a wider understanding of different approaches to children's development and learning within a socio-political perspective. Different schools of thought including a critical perspective of behaviourism and information processing theories, cognitive development, constructivist, and the socio-constructivist perspective and cross-cultural frames of theory have been included. The MP and the Delhi syllabi are based on the similar lines as model syllabi. However, the course material suggested by the MP syllabus makes it difficult to transact the essence of the course as envisioned in the NCFTE. In the Delhi syllabi, locating the construct of childhood in the Indian context remains neglected while adequate attention is paid to childhood and learning theories. The Chhattisgarh syllabi pay considerable attention to constructivism and cognitive-structuralist theory of Piaget and Vygotsky while a little space is given to behaviourism and other schools of thought. Also, it tries to consolidate a large number of concepts related to the area in a single paper that are covered by two courses in all the syllabi. The model syllabi attempts to give a wider understanding of different approaches to children's development and learning within a socio-political perspective where as the Chhattisgarh syllabi focusses only on the two approaches of learning and cognition while negating the social aspect. To conclude, the revised syllabi reflect a shift from the dominant paradigm of learning processes. It attempts to locate conceptions about child and childhood in the Indian social context thus developing a more sensitive and critical understanding of childhood. An attempt to innovate the curricula has been made by all the three states. Apart from few in considerations, all appear to be closer to the NCFTE guidelines.

Contemporary Studies

Contemporary studies aim to develop an insight into the nature of education from a philosophical and sociological perspective and evolve a deeper understanding of its purpose and its relationship with society and humanity. It covers two theory areas under it—

teacher and learner in society; gender, school and society. The courses attempt to shift the focus from psychological characteristics of the individual learner to his/her social, cultural, economic and political contexts. It aims to develop awareness regarding India's pluralistic nature; issues of identity, equity and diversity by drawing through disciplines of sociology, history, philosophy, political science and economics. It engages learners with issues of human and child rights, their constitutional provisions and environmental education in asserting the role of education in sustaining a democratic social order.

Table 2

Contemporary Studies

	Year	Maxi-mum Marks	External	Internal	Total	Student Contact Hours	Name of the Courses
Model Syllabi	Ist	100	75	25	150	100	Contemporary Indian society
	IInd	50	35	15		70	Diversity, gender and inclusive education
Chhattis-garh	Ist	100	80	20	200	120	*शाला और समुदाय*
	IInd	100	80	20		120	*आधुनिक विश्व के संदर्भ में भारतीय शिक्षा*
Madhya Pradesh	Ist	100	70	30	150	140	*समसामयिक भारतीय समाज में शिक्षा*
	IInd	50	35	15		70	*विविधता, समावेशित शिक्षा और जेंडर*
Delhi	Ist	100	75	25	200	65	Education and society
	IInd	100	75	25		65	Socio-philosophical perspective on education

Thrust Areas of Individual Course

The analysis reveals that all the four D.Ed curricula have placed units of study (themes) relating to contemporary issues and concerns. As seen in Table 2, all syllabi have included two courses,

one in each year related to area A and accordingly student's contact hours and the total weightage given to the course differs. In the model syllabi, the course is specifically called contemporary Indian society in which concepts related to the impact of colonisation, Indian society, economy and its polity; anti-colonial structures and visions of independent India have been included within the frame of the Indian freedom struggle. The course proceeds to discuss the constitution of India in relation to education. There is a full unit on democracy in India, which exposes students to challenges emerging from diversity. Thus, the syllabus help learners to be familiar with an interdisciplinary analysis of socio-political and economic dimensions of Indian society as envisaged in NCFTE 2009. The second course in the model syllabi focusses on issues of diversity, inclusive education including disability. This course includes a separate thrust on gender, school, and society. Through a course on diversity, gender and inclusive education, the model syllabi address the complex relationship that exists between diversity, inequity, and education. It has units, such as children with special needs and gender, school and society.

The Chhattisgarh curriculum has a course on school and community which includes various aspects of contemporary Indian society. This course attempts to engage student teachers with concepts of diversity, gender, inequity and their impact on education. It also attempts to expose students to the colonial structure of education policy and practice. The Chhattisgarh courses have sub units on *आदिवासी समाज, बाल श्रमिक, दलित शिक्षा, भेदभाव की वास्तविकता और जनजातीय शिक्षा, भाषा व संस्कृति का अलगाव*. Thus, a contextualisation of education within the needs of the existing society as opined by NCF, 2005 and NCFTE, 2009 can be seen. There is also a separate unit on addressing issues of inequity within the Indian constitutional frame. In this unit, the notion of inequity resulting from caste, migration in search of livelihood and its effect on education, gender, child labour are addressed. Indian educational thinkers like Tagore, Gandhi, and Krishnamurti have been placed as 'alternative perspective and experiments'. An attempt is made to link the processes of schooling within the larger framework of community. The focus of the second course of the Chhattisgarh syllabi is on modernity and education in the context of contemporary India and the international scenario. An understanding of alternative approaches and programmes in schooling has been incorporated through a unit. The Chhattisgarh curriculum talks about children with special needs under the

paper *बाल विकास और सीखना* though the historical and contemporary perspectives on disability remain missing.

The MP syllabi have in its first year, a course that deals with contemporary Indian education and its relation with economy and politics. A unit on social change and education is included and an attempt has been made to link Indian democracy through the enterprise of education. The commendable aspect is that the course tries to contextualise educational issues through a subunit on various educational programmes, such as operation blackboard; DPEP located within state context. The second course addresses the issue of inclusive education with a sub unit on status of inclusive education in MP that tries to locate disability and children with special needs in the broader educational context. A sub-unit on gender focusses on developing the interaction between gender and education, however, the reading list does not suggest any material on the same sub-unit.

On the other hand, Delhi syllabus has in its first year, a course that dwells deeply about understanding contemporary Indian society and its relation with numerous issues, such as gender, poverty and the linkages among them. The course tries to locate education through various commissions after independence and attempts to build an understanding of educational development after Independence. The second paper provides a theoretical base of philosophy and sociology and their relation with education. Unlike other states that give primacy to various educational philosophers, the Delhi syllabus outlines different schools of philosophy, such as pragmatism, naturalism in the course. Unlike other two curricula, a unit on human rights and child rights have also beer covered under this particular course.

Conclusion

While the NCTE model syllabi, MP and Delhi attempts to give a comprehensive political, economic, historic and sociological perspective of contemporary Indian society, the Chhattisgarh course though has attempted to incorporate issues but they remain in the realms of political frame of Indian society and its resulting impact on education. The Delhi D.Ed incorporates philosophical understanding in this area of contemporary studies and that too is limited only to a single unit. The syllabus outlines culture and value education too. No units on the nature of knowledge, aims and objectives of education can be seen in the Delhi D.Ed syllabus. This is an area of strong contention as philosophical understanding is extremely

crucial for development of sound theoretical base of student teachers. This understanding helps them in grasping the deeper layers of various educational issues and finding its solution too. The admirable aspect of both MP and Chhattisgarh courses is that they have contextualised various policies and issues within their state context. This will help student-teachers to understand the deeper nuances and the impact of such policies in their respective states.

Educational Studies

This area of foundational studies centres on the basics of education, such as the meaning of education, curriculum, teaching, learning and school. This area has been distributed into two sub parts, namely aims of education, knowledge and values; developing the self and aspirations as a teacher. The rationale behind including this area is that the contemporary educational discourse tends to exclude a substantive engagement with philosophical questions about the fundamental aims and values. NCFTE places sufficient attention to teachers as reflective practitioners. Therefore, a greater insight into one's aims of life, strengths and weaknesses provides the base for developing professionally competent teachers.

Table 3

Educational Studies

	Year	Maxi-mum Marks	External	Internal	Total	Student Contact Hours	Name of the Courses
Model Syllabi	Ist	100	70	30	250	100	Education, society, curriculum and learners
		50	35	15		45	Towards understanding the self
	IInd	50	35	15		45	School culture, leadership and change
		50	35	15		45	Teacher identity and school culture
Chhattis-garh	Ist	100	80	20	200	120	*ज्ञान, शिक्षाक्रम और शिक्षणशास्त्र*
	IInd	100	80	20		120	*शिक्षादर्शन: व्यक्ति सीखना व शिक्षा*

Madhya Pradesh	Ist	100	70	30	250	140	*शिक्षा, समाज, पाठ्यचर्या और शिक्षार्थी*
		50	35	15		70	*स्वयं की पहचान*
	IInd	50	35	15		70	*शिक्षक और शालेय संस्कृति*
		50	35	15		70	*शालेय संस्कृति, नेतृत्व एवं परिवर्तन*
Delhi	Ist	100	75	25	200	65	School leadership and management
	IInd	100	75	25		65	Curriculum, pedagogy and evaluation

Thrust Areas of Individual Courses

The NCTE model syllabi have four courses in this area (Table 3). The first course relates to the aims of education and knowledge and builds upon the philosophical, the sociological, and the historical perspectives on education with the aim to understand the interface between education and the Indian society. It builds upon the relationship between schooling and education as visualised by different western and Indian thinkers. Through units on education, politics and society it questions the role of education in reproducing dominant patterns and challenges marginalisation with reference to class, caste, gender and religion. The second course is designed to be conducted through a series of workshops. The course aims student teachers to facilitate the development of individuals who can take responsibility for their own learning and give a conscious direction to their lives through reflection. The third course enables students to develop a critical understanding of the notion of school organisation and management in the context of the structures and processes of the education system. It focusses on the context specific notions of school effectiveness and prepares students for facilitating change in education through a comprehensive understanding of educational and school reform. The fourth course is designed in the format of workshops to develop student teachers personal perspective on education and also aims to explore alternatives in education.

Chhatisgarh has placed two courses under this area. The first course titled *ज्ञान, शिक्षाक्रम और शिक्षणशास्त्री* talks about knowledge and curriculum. It further builds upon different philosophers, such as Plato, Kant and John Locke with a focus on knowledge and its nature. Units, such as knowledge and proof, types of knowledge give a strong philosophical orientation to the learners. The course engages with questions of how knowledge is constructed and validated through different processes. The second course gives importance to the relation between education and philosophy. It focusses on the philosophical ways of thinking and presenting arguments and dwells in details about understanding human nature through different philosophical schools of thought. There is a full unit on philosophical and educational underpinnings of Indian as well as western thinkers, such as Vivekananda, Aurobindo, Plato and Rousseau. A subunit on different ways of conceptualising human nature aims to deepen the linkages between society and education. There are no sub-units in these courses that discuss school as an organisation and its management, effectiveness and leadership issues.

The Madhya Pradesh D.Ed. curricula have in its first year that focusses on the philosophical understanding of education and its nature with special reference to national and international philosophers view on education. Units of study include knowledge and curriculum, learning, learner and teaching too. The second paper focuses on developing self and is to be conducted through a series of workshops. It aims to develop an awareness about oneself as an individual as well as the as a teacher. The courses in the second year are based on the model syllabi guidelines on the role of teacher as a facilitator and in classroom and school culture. The second paper dwells on the role that teachers and community can play in school development and as the title suggests draws heavily from school planning and management issues. The other two courses are designed in the format of workshops as suggested by the model syllabi.

The Delhi D.Ed has a course that focusses on school management and planning area. The units are designed to familiarise students with the structures and processes of the Indian education system. Unlike the papers of both states, Delhi has a unit on professional ethics and accountability. It also takes into consideration classroom, stress and time management concerns. Also, Delhi syllabus has a course that combines the curriculum,

pedagogy and evaluation under the foundational area. It aims to build an understanding on curriculum and various pedagogic approaches. It links both these aspects with evaluation and focus on the inter linkages among them. A unit on action research aims to open the discourse of teacher as a practitioner.

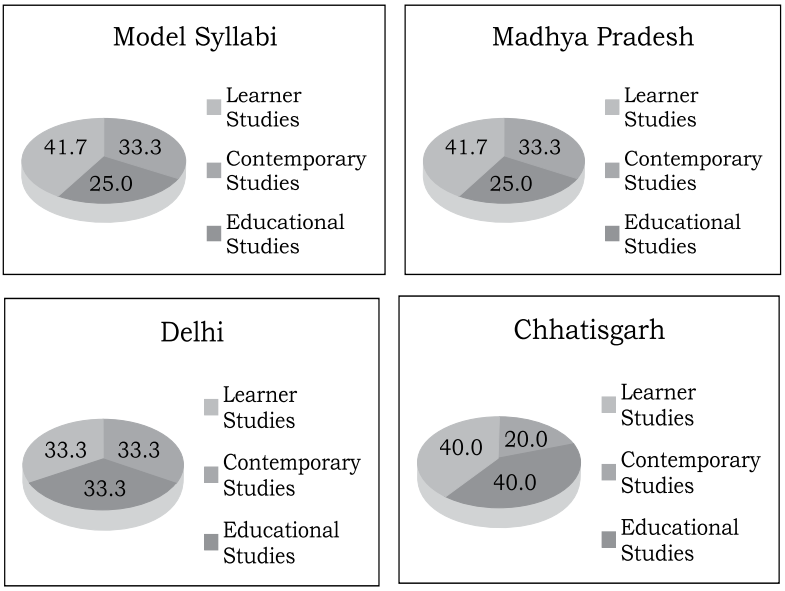

Figure 1

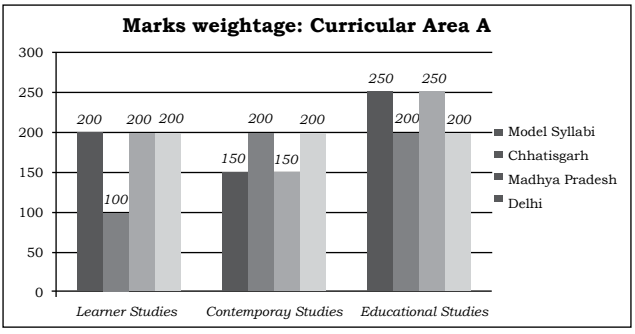

Figure 2

Conclusion

Figures 1 and 2 reflect the marks percentage and value assigned to each sub areas by different state boards. Only Delhi gives equal

importance in terms of marks distribution to all three areas of learner studies, contemporary studies and educational studies. However a close reading of the syllabus reveals that the philosophical aspects are given less importance in the area of educational studies. In comparison, Chhattisgarh gives least importance to the area of learner studies that focusses on psychological perspectives on education. Model syllabi and MP curricula are similar in their distribution of marks of each area. The NCTE model syllabi focus on developing a critical understanding so as to build a linkage among education, knowledge and power whereas Chhattisgarh syllabus has a philosophical orientation towards education. The syllabus gives primacy to philosophy to understand various educational issues that at times becomes repetitive and gives little space to socio-cultural aspects. It is also silent on the school organisation and management issues as well. The relation between school and community is discussed in the area of contemporary studies under the course *शाला और समुदाय*. Delhi syllabi stand in stark contrast with the Chhattisgarh syllabi as it gives a cursory importance to the area of philosophy in understanding educational debates. The course titled 'socio-philosophical perspective of education' is placed under the area of contemporary studies with a single unit devoted to knowledge and aims of education. However, both these syllabi offers only two courses in this area and do not share the format of the model syllabi in terms of courses that are designed in the format of workshops. In comparison, just like model syllabi, the MP syllabi have four papers in this area. Table 5 further shows that the model syllabi have placed courses under the sub-area of 'developing the self and aspirations as a teacher'. Both courses are designed in the format of workshops. An attempt has been made so that the student-teachers facilitate the process of development of themselves. And are encouraged to explore and develop through self-reflection a greater insight into their aims of life, strengths and weaknesses and dynamics of formation of identity and a true individuality. The impact of personal and social attitudes, developing a feeling of empathy are all given due importance keeping in mind the NCFTE philosophy of teacher education mentioned earlier. Neither Delhi nor Chhattisgarh have placed any such course in the format of workshops for teachers, own personal and professional development under this area.

Curriculum Studies and Pedagogic Studies

This area aims to engage prospective teachers with the conceptual knowledge they have gained through general education. It has two sub parts, namely knowledge and curriculum and language proficiency and communication. Through these areas an effort has been made to engage student teachers with subject-content. The theoretical concepts learnt during general education in school and college can be revisited and reconstructed through understanding school curriculum and examination of select concepts. The area of knowledge and curriculum has been integrated with pedagogic studies in the model syllabi. This is so because it is quite difficult to demarcate between curriculum studies and pedagogies studies, as both areas are intermeshed. The intention of the area of pedagogy studies is to understand school subjects and their pedagogic approaches in the context of the school and the learner by building linkages among learner, context, subject discipline and the pedagogical approach. Pedagogic study is focussed on sciences and social sciences instead of on individual school subjects of history, geography or chemistry. This is assumed to help a teacher draw upon epistemological insights that fall under the rubric of sciences and/or social sciences.

Table 4

Pedagogic Studies

	Year	Maxi-mum Marks	External	Internal	Total	Student Contact Hours	Name of the courses
Model Syllabi	Ist	50	35	15	600	50	Pedagogy across the Curriculum
		100	70	30		100	Understanding Language and Early Literacy
		100	70	30		100	Mathematics Education for the Primary School Child
		50	35	15		50	Proficiency in English

	IInd	100	70	30		100	Pedagogy of Environment Studies
		100	70	30		80	Pedagogy of English Language
		100	70	30		100	Optional pedagogic courses a) Social Science Education b) Language Education c) Mathematics Education d) Science Education
Chhattis-garh	Ist	100	80	20	600	120	*गणित व गणित शिक्षण*
		100	80	20		120	*भाषा व भाषा शिक्षण*
	IInd	100	80	20		120	*गणित व गणित शिक्षण 2*
		100	80	20		120	*भाषा (हिंदी) व भाषा शिक्षण*
		50	40	10		60	*भाषा (द्वितीय भाषा अंग्रेजी) व भाषा शिक्षण*
		50	40	10		60	*भाषा (तृतीय भाषा संस्कृत) व भाषा शिक्षण*
		100	80	20		120	*पर्यावरण अध्ययन व् उसका शिक्षण*
Madhya Pradesh	Ist	100	70	30	890	140	*भाषायी समझ, प्रारंभिक साक्षरता एवं हिंदी शिक्षण*
		100	70	30		140	*गणित शिक्षण प्रारंभिक स्तर-1*
		50	35	15		70	Proficiency in English

	IInd	50	35	15		60	*भाषा शिक्षण कोई-1* *अ. संस्कृत भाषा शिक्षण* *ब. उर्दू भाषा शिक्षण* *स. मराठी भाषा शिक्षण*
		75	50	25		110	Pedagogy of English
		100	70	30		120	*पर्यावरण अध्ययन शिक्षण*
		50	35	15		70	*सामाजिक विज्ञान शिक्षण*
		75	35+25	15		110	*विज्ञान शिक्षण*
		50	35	15		70	*गणित शिक्षण* *प्रारंभिक स्तर-2*
Delhi	Ist	100	75	25	700	65	Language Education (Hindi/ Punjabi/Urdu)
		100	75	25		65	Language Education (English)
		100	75	25		65	Mathematics Education
		100	75	25		65	Environmental Studies Education
	IInd	100	75	25		65	Any three: one language compulsory Language Education (Hindi/ Punjabi/Urdu) Language Education (English)
		100	75	25		65	Mathematics Education
		100	75	25		65	Social Studies Education
		100	75	25		65	Science Education

Thrust Areas of Individual Courses

Table 4 reflects the importance given in the curricula to the pedagogy and teaching of disciplinary subjects. However, the difference lies is the epistemological and ideational of having these courses. The model syllabi have 10 pedagogic courses. Out of these six are compulsory and four pedagogic courses are optional. The MP syllabi have eight compulsory paper and three optional language paper. The Delhi curricula have seven compulsory paper and three optional papers. The Chhattisgarh syllabi have seven compulsory pedagogical papers and no optional papers. Unlike other states, it does not have a separate social and science education paper and has a paper on Sanskrit as third language. The model syllabi have a generic course on pedagogy across the curriculum that tries to engage student-teachers with epistemological questions of subject matter and their pedagogical approaches. No other state curricula have a course under this area. Due to the paucity of the space, only Mathematics and English education will be discussed in the following section.

Mathematics Education

The content of optional courses on mathematics education is pitched to orient teachers to teach at the middle school level. This differs from mathematics education for the primary school child, which is compulsory for every student-teacher to study. The optional paper attempts to provide deeper insight, develop skills, and enhance sensitivity towards mathematical rigour by looking at the fundamental domains of mathematics: algebra, geometry, and data handling. In comparison, the MP curriculum has two compulsory papers focussing on developing pedagogical content knowledge and the development of mathematical conceptual knowledge in children with the help of the theories of Piaget and Vygotsky. It also has a subunit on Indian mathematicians and on evaluation in mathematics. Through units on pedagogical content knowledge, the MP paper builds upon the general education of student-teachers by focussing on topics like arithmetic, algebra, statistics and the like. An attempt to build a thorough understanding of these concepts can be seen from the Delhi syllabus as the units focus on developing perspective towards about mathematical knowledge. The second paper of MP on mathematics education solely focusses on the elementary level mathematics, which is optional in case of Delhi D.Ed paper. It stresses on the

area of mathematics curriculum and communication as well as mathematical reasoning. The Chhattisgarh curriculum aims at the development of mathematical thoughts of student-teachers. The gradual progression of mathematical thinking and developing a perspective of mathematics in the light of NCF - 2005 can be seen in its stated objectives. It deals with math phobia, and how children learn and understand mathematics. There is a separate unit on games, the role of language in mathematics and on development of specific concepts like space, counting. Similar kind of content is spread over two courses of 100 marks each, one in each year syllabi. The second paper under the same title focusses on the nature of mathematics, the role of language in mathematics and pedagogy of mathematics focussing mainly on constructivism. It has units on decimals, proportion, arithmetic, and fraction and sub units on estimation skills, procedural and conceptual knowledge as well. In Chhattisgarh both the papers dealing with primary and middle school mathematics are compulsory.

Proficiency in English

The model syllabi course on 'proficiency in English' aims to develop appropriate and context-specific use of language as NCFTE envisions teacher's language proficiency and communication skills as critical factors in school education. The unit on the nature of language develops an appreciation for the language and its use rather than on memorising aspects of grammar and pure linguistics. Only MP syllabi has a same course in its Ist year, both Delhi and Chhattisgarh have language education (English) as a paper that focusses on skills of listening and reading; and speaking and writing English. The MP paper has a separate unit on Grammar apart from having units on the four skills of a language. In comparison, the Delhi syllabus has units on lesson planning, material development and assessment. It provides a more comprehensive outlook by focussing on English language in the curriculum and its assessment where as the MP syllabi has another compulsory paper that deals with the pedagogy of English in its second year. This paper centers on teaching, planning and evaluating English at an elementary level. The Delhi D.Ed has a similar optional paper in the IInd year. The Chhattisgarh syllabus focusses on the structure of English language through a unit but the four skills of language and do not find any space in the syllabus.

It tries to give a historical and political context of English in India and has unit on how can English be taught through activities. The paper is less content oriented and focusses more on the pedagogical aspects of the language.

Conclusion

All the syllabi have units on the nature of mathematics and the development of its thought and places importance on mathematical vocabulary, levels of understanding and the role of mathematical communication (language) in building a mathematical way of thinking. In this approach, the general education of mathematics is interlinked with a pedagogic understanding. However, the MP curricula stress more on the pedagogical content knowledge of mathematics where as the others focusses on the nature of the subject with its language, the role of communicating formal mathematics to children, the importance of text books in the teaching-learning process of mathematics. The theoretical engagement with learner assessment has been integrated with courses in pedagogic studies and curriculum studies in all state syllabuses except Chhattisgarh, which has no unit on assessment in mathematics. The perspective of assessment and evaluation, with what purpose should teachers be trained in approaches to access form significant aspects of the model syllabi. MP and Delhi papers have a sub-unit on assessment and evaluation of both the subjects, that is, English and Mathematics. Chhattisgarh only deals with assessment with respect to CCE only in the English language paper.

Summary of Findings

This study endeavoured to examine the pre-service elementary teacher education curriculum of three states— Delhi, Chhattisgarh and MP. These states have attempted to redesign their D.Ed/ D.El.ED courses in the light of the NCFTE, 2009 and the subsequent model syllabi prepared by NCTE. The detailed analysis of curricular areas was presented at the end of each section in the paper. However, it would be meaningful to present the key areas of comparison among the different curriculum. The major departure lies in the total marks allotted to each year by different states as presented in Table 5. As seen from the table, Delhi has allocated higher marks to its theory as well as practicum as compared to other states. However, the student contact hours remains comparable to other states and in some cases remain lower than other states.

Table 5

Syllabus	Total Marks	Ist Year		IInd Year	
Model Syllabi	1700	850	Theory 650	850	Theory 550
			Practicum 200		Practicum 300
Delhi	2300	1150	Theory 700	1150	Theory 700
			Practicum 450		Practicum 450
MP	1950	950	Theory 600	1000	Theory 650
			Practicum 350		Practicum 350
Chhattisgarh	1800	900	Theory 600	900	Theory 600
			Practicum 300		Practicum 300

The courses on foundations of education are located in the sociological, historical, economic, philosophical, cultural and political context and thought in education. Although at the onset, it appears that all the syllabus shared a similar vision based on NCFTE, a close reading of the documents reveal shifts in perspective and the importance different states gave to different curriculum area as seen from Figure 1 and 2. The MP syllabi was in greater consonance with the NCTE model syllabi however the suggested reading list for different papers does not truly reflect the essence of NCFTE, 2009 principles as discussed in the earlier section. The reading list of majority of the courses were incomplete and had limited references. On the contrary, the Delhi D.El.Ed had an exhaustive and balanced list at the end combining the work of both national as well as international scholars. In the Delhi syllabi, there seemed a move from the over-emphasis on theoretical learning into a combination of theory and practice as it had practicum attached to each paper. The Delhi syllabi stressed more on the sociological and political perspective in its courses whereas the Chhattisgarh curricula had a strong philosophical bend that was reflected through its courses. An epistemological shift in the nature of knowledge, learner and subject matter was observed in all three syllabi. A move towards a constructivist approach towards learning and development can be traced through the units of study. The challenge now lies with each state to transact the revised D.Ed curriculum in practice and prepare its prospective teachers as professional and humane teacher, the vision encapsulated by NCFTE, 2009.

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Hindi Language Competency of KGBV Students in Bihar

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ABSTRACT

The study identified some reasons of poor performance (about 40 per cent) in Hindi language of Class VI students in KGBV of Bihar and also noticed loss in transition (about 6 to 24 per cent) at the upper primary level despite residential facilities being provided to them. There existed acute shortage of teachers (46 per cent) as well as wardens (46 per cent) in KGBV, resulting in poor management of residential facilities. Additionally, non-availability of language teacher for teaching Hindi and their limited understanding of pedagogical processes left the teaching-learning transaction unattended. Their insufficient training to language at the time of induction showed a gap in inputs what they desired and what they had. In some KGBVs (e.g., Kishanganj) there existed minimal activities to overcome learning deficiencies in Hindi. They had virtually no idea about how to evaluate students and formulate plan for improving Hindi language. Illiterate mothers had a strong desire to educate their daughters (40 per cent achievement in Hindi language). Attitudinal problem of the school teachers and headmasters were the prominently observed. They attributed to the KGBV stakeholders for the managerial activities. The study suggested deployment of teachers and their intensive training for improving Hindi language.

Keywords: *Hindi language, Knowledge, Skill, Application, Learning, Teachers*

Introduction

The study was designed to assess Hindi language competency level of KGBV students in Bihar. The basic objective of Kasturba

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Gandhi Balika Vidyalayas (KGBV) is to ensure access and quality education to the girls of disadvantaged groups of society by setting up residential schools at upper primary level. In Bihar 304 wardens (56 per cent) and 891 part time teachers (56 per cent) under module 1 are committed to educating the drop out students (DOS) and out of school children (OOSC).The learning needs of such children demand greater understanding including sensitivity to their background. Hence, it is essential to work out what methods and study materials to be used for accelerating learning, how to enable children to reach grade level knowledge and skills. How to teach Hindi language to girls, who either break their study at the primary school level or join the school for first time, is a challenge.

The teaching-learning needs of girls in the KGBV are a challenge as well as an opportunity. All KGBV students have had a break in their schooling due to family or other circumstances. Such girls are likely to be lagging behind academically. The entire process of enabling girls to reach Class VI needs to be ascertained. "How to enable girls to learn at their own pace?" National Evaluation Report of KGBV (NER, 2007) titled captured some teaching practices in various states. In Karnataka for instance, a zero class was provided to students till they reached Class VI level. In Gujarat, Model 1 was used to complete the primary cycle of the enrolled girls. In Tamil Nadu and Jharkhand the primers developed for bridge courses were used but the rush to prepare them for early school leaving class (ESLC) was also evident (NCERT, 2008). Andhra Pradesh enabled students from bridge courses to enrol in KGBV, thereby, doing some amount of preparatory work before they were formally enrolled in Class VI. In KGBV, some states used supplementary materials. At the initial stage Bihar followed a bridge course for the new-entrants in KGBV. The most worrying outcome was that there was little understanding of the programme in several states (Gogoi and Goswami, 2015; NER, 2013; PEO, 2015).Programme Evaluation Organisation (PEO, 2015), a wing of NITI AAYOG, observed that, "the initial momentum that the programme gained could not be sustained after 2009". In many cases, where Model 3 was being followed, the learning related issues were similar to that of the formal school system (NER, 2007). The entry level of learning was not taken as a point of departure or as the baseline for planning their academic growth. There was lack of clarity about "who was eligible for admission in KGBVs" and "how to identify the eligible girls".

It was also observed that no standardised and uniform method was followed for the identification of girls for the admission in KGBVs. There was no curriculum, no separate classes (except in Gujarat) and no teachers' training for this purpose (PEO, 2015). Many states followed their own methods for bridging the academic gap of the out of school children (OOSC) and the drop out students (DOS) in KGBV. In Gujarat, for instance, the number of never enrolled girls was quite high in the Model 3 KGBVs. It was not clear how they were tackling the bridging process for various levels. It was worth noting that the teaching and learning processes visible in KGBVs was textbook-oriented and in most states it was not very different from the formal schools (NER, 2013). Teachers had little inputs in participatory and activity-based teaching practices. In some areas where model 3 was being implemented (with the exception of Karnataka) the children went to the formal school during the day and the part-time teachers of KGBV provided remedial teaching and support before and after school. This practice still continues in Bihar.

The study on KGBV was undertaken because of twin reasons: first, girls in Bihar showed low achievement in Hindi language of Class V (NAS cycle3, 2012) and second, Bihar did not have benchmark data of Hindi language of Class VI for KGBV. Usually, girls outstrip boys in language acquisition because of early cognitive development. In Bihar the scenario is quite different. Girls scored less than their counterpart in Hindi language (NAS cycle3, 2012). National Council of Educational Research and Training (NCERT) conducted a national achievement survey (NAS) for Class V of the government schools excluding KGBVs in 2012. Language is a serious issue in Odisha and Jharkhand where the tribal girls continue to face learning difficulties as the textbooks are in the state language. Even the teachers are young urban women who have limited understanding of pedagogical processes (NER, 2013). In border districts of Bihar where minority or a few tribal communities concentrate, language poses a serious problem in learning for the students (BEPC, 2015).

The 2001 Census identifies 27 mother tongues listed under Hindi. More than 20 per cent districts at the national level are linguistically heterogeneous. The National Curriculum Framework (2005) supports the idea of mother tongue at the primary level and recommends gradual addition to other languages in elementary classes. The language problem poses moderate to severe learning

disadvantage for children who shift to Hindi from the regional dialect. *Maithili*, *Angika*, *Bajika* and *Maghi* are widely spoken in Bihar whereas Hindi as the medium of instruction is used in the government schools. The National Achievement Survey (NAS) highlights the position of Bihar in the context of language learning in Classes III, V and VIII. Bihar scored less than 45 per cent as compared to national average (55 per cent) in reading comprehension in Class V (NAS cycle 3, 2012). Both Boys and girls scored lower than the overall average score on all the mental processes. Boys performed better than girls in reading comprehension. Similar cases were recorded in Class III (Bihar socred 53 per cent as compared to national average 64 per cent). Where the medium of instruction is not the mother tongue at the primary school level, it becomes difficult for the girl child to cope with the school instruction. A major challenge being faced by the children of KGBVs in Bihar is that they do not compete with the required level of Class VI. The study primarily focusses on the assessment of achievement in Hindi language and finds out gaps in language competencies.

Objectives of the Study

The main objectives of the study were to find out:

i. Learning achievement level in Hindi language of Class VI students,
ii. Gaps in Hindi language competencies,
iii. Academic support system of KGBVs,
iv. KGBV management system and
v. Competency level of Hindi teachers.

Methodology

The Setting and Coverage— Altogether 535 KGBV in 530 blocks of 38 districts (altogether 534 blocks) were operational under Sarva Shiksha Abhiyan (SSA) since 2011–12. In five districts more than one KGBV was functioning because of minority concentration. Altogether 48719 students (45% SC, 36% OBC, 8% minority, 7% ST and 4% BPL) were admitted in KGBVs (BEPC, 2015).The study was conducted on 20 KGBVs spread over 20 blocks in 10 districts of nine divisions. It was a multistage sampling covering district at the 1st level, KGBV at the 2nd level and girl students of class VI, part-time teachers and warden at the 3rd level. At the 2nd level two

KGBVs from each district were selected with the help of standard operating procedure (SOP). At the 3rd level 398 girl students (20 from each KGBV were sampled through systemic random sampling with replacement technique. Additionally, 20 wardens, 20 Hindi teachers and 20 HMs/teachers of the feeder schools participated in the study.

Tools Used

1. *Hindi Language Test for Class VI Students*— To measure the learning level of penultimate class, a Hindi language test for Class VI (28 objectives items and two descriptive items) based on IRT model, was developed. The test consisted of two set of items viz., language-specific elements, such as contents of textbooks, grammar and contents of writing skills. These two categories of items represented four competencies — knowledge, understanding, skill and application (KUSA).

Table 1

Area Wise and Class Wise Distribution of Hindi Language Test Items

Area	Class II	Class III	Class IV	Class V	Total
Knowledge	3	6	0	0	9
Understanding	0	0	4	2	6
Skill	0	0	0	9	9
Application	0	0	5	1	6
Total	**3**	**6**	**9**	**12**	**30**

2. *KGBV Teacher Schedule*— It covered some dimensions, such as group formation for remedial teaching, time spent on teaching, feedback and monitoring, competency wise planning for improving language, etc.
3. *Warden Schedule*— Items included were: ensuring textbooks for students, health care, promoting life skills activities, making child profile, etc.
4. *KGBV Management Schedule*— It was developed for measuring process of enrolment, convergence with the feeder school, teacher and staff deployment, continuous assessment of students, etc.
5. *School HM Schedule*— It enfolded some questions of convergence with the school and interaction with the KGBV teachers.

Results

Table 2 presents mean per cent of learning outcomes in Hindi language. The state mean per cent is 40 with SD 20.57.Nalanda and Jamui secured 54 and 55 per cent, respectively, while Kishanganj and West Champaran underscored by obtaining only 25 and 29 per cent. Bhagalpur had 36 per cent, showing 4 per cent below the state mean percentage. Madhepura and Madhubani secured 37 and 38 per cent which was about 2–3 per cent less than the state mean per cent. The results further, revealed substantial differences in learning outcomes between the highest performing districts (Nalanda followed by Jamui) and the lowest performing districts (Kishanganj followed by West Champaran).

Table 2

Mean percentage of Class VI students

District	Mean %	SD
Bhagalpur	35.63	20.468
Kishanganj	25.36	14.372
Madhepura	36.88	22.665
Madhubani	37.86	18.026
Siwan	42.95	24.986
West Champaran	28.93	12.859
Gaya	42.77	11.817
Jamui	53.57	15.514
Nalanda	54.98	24.343
Rohtas	40.36	17.518
Bihar	**39.85**	**20.571**

Table 3

Percentile Score in Hindi Language for Districts

District	Percentile					Range	
	10th	25th	50th	75th	90th	75–25	90–10
Bhagalpur	3	6	9	13	20	7	17
Kishanganj	2	4	7	9	12	5	10
Madhepura	2	5	10	18	20	13	18
Madhubani	4	6	11	15	17	9	13
Siwan	3	5	12	19	20	14	17

West Champaran	3	6	8	10	14	4	11
Gaya	8	9	12	15	17	6	9
Jamui	8	12	16	17	21	5	13
Nalanda	8	10	15	21	25	11	17
Rohtas	4	7	12	15	18	8	14
Bihar	**4**	**7**	**11**	**15**	**20**	**8**	**16**

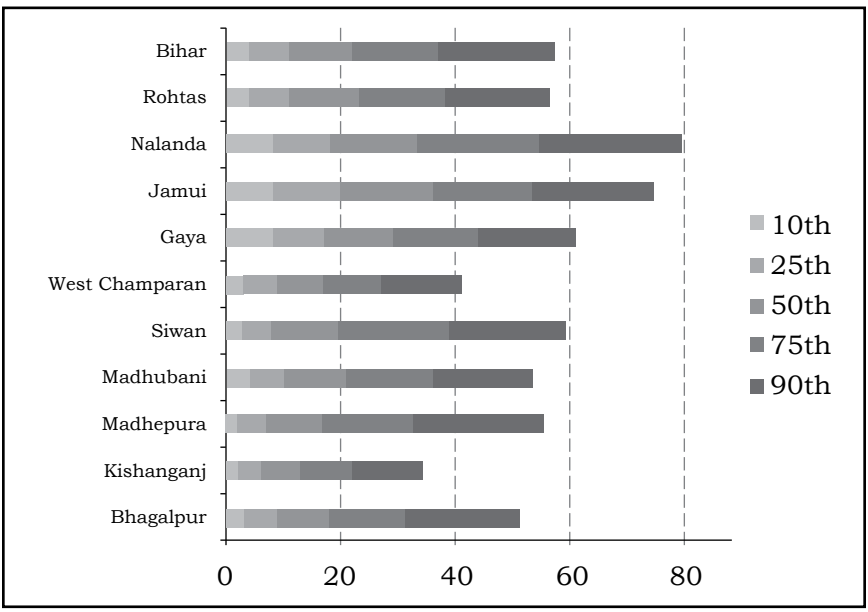

Figure 1

Table 3 illustrates percentile score in Hindi language for districts. West Champaran had an inter-quartile range of just four while Siwan had a corresponding value of 14. These values suggested that the Class VI KGBV students in West Champaran were far more homogeneous than that of Siwan. For other districts, such as Kishanganj, Gaya and Jamui, the inter-quartile range varied between 4–9, 9–15 and 12–17. The range of performance for the same districts was between 4–6 scale-score points. It was to note that Jamui was the highest performer while Kishanganj was the lowest. But variation was noted in both districts. The percentiles provided additional information while comparing achievement scores among districts.

For example, when the districts were arranged in order of average score, the differences between adjacent districts tended to be small. However, the ranges of score were not similar. For example, there was no significant difference between the average score of Madhepura, Madhubani and Rohtas. However, the range of scores between the 25th and 75th percentiles was very different: Madhepura (13), Madhubani (9) and Rohtas (8)). Further, the 50th percentile scores of the students of Madhbani (11) and Siwan (12) were far better than 75th percentile scores of Kishanganj (9) and West Champaran (10).

The study compared category-wise average achievement scores of students (Table 4). Students of minority group showed lower performance (about 32 per cent) than the state average (39.85). Performance of ST students was better than SC and OBC. Though only four students in general category were available, their performance was better than the remaining groups. Altogether 160 OBC students followed by 134 SC appeared in the evaluation session.

Table 4

Achievement of Class VI Students by Category

Category	N	Mean %	SD
SC	134	41.74	20.767
ST	47	43.77	19.596
OBC	160	39.60	20.045
General	4	49.11	11.056
Minority	53	31.67	21.314
Bihar	**398**	**39.85**	**20.571**

Table 5 throws light on the overall achievement on each competency (KUSA). The results show a descending trend from knowledge to application (mean per cent varied from 35 to 44). An apparent reason of poor performance in Hindi language was that they did not have sufficient skills to apply their knowledge to different situations. In each competency there existed a variation in responses making a few items either easy or difficult. A large number of students either skipped questions or answered incorrectly. A few students (<5 per cent) guessed to answer the questions. In case of passage writing and letter writing the results were less encouraging. About 69 per cent respondents fairly copied the text with sufficient space while 49 per cent maintained shape and size of the letters. However, about 41 per cent copied the text with a number of errors

ranging from 1–7 (fig. 2). It was expected that students should have letter writing skills. The entire format of the letter writing was divided into five sub-headings — heading of the letter, date, content, spelling error and end of the letter. About 17 per cent students did not attempt this question. There existed a wide variation in response distribution at each sub-heading. Only 19 per cent followed the heading style of the letter at the left end. Hardly 3 per cent of them mentioned date on the letter. About 66 per cent committed spelling errors while elaborating contents of the letter. About 24 per cent used KGBV experiences in the content. And finally, 9 per cent concluded the letter at the right end. This showed a significant gap in letter writing skill (Figure 3).

Table 5

Overall Achievement of KUSA

Achievement	Mean %	SD
Knowledge	43.66	22.91
Understanding	43.47	28.10
Skill	34.60	26.08
Application	36.64	27.17
Total	**39.85**	**20.57**

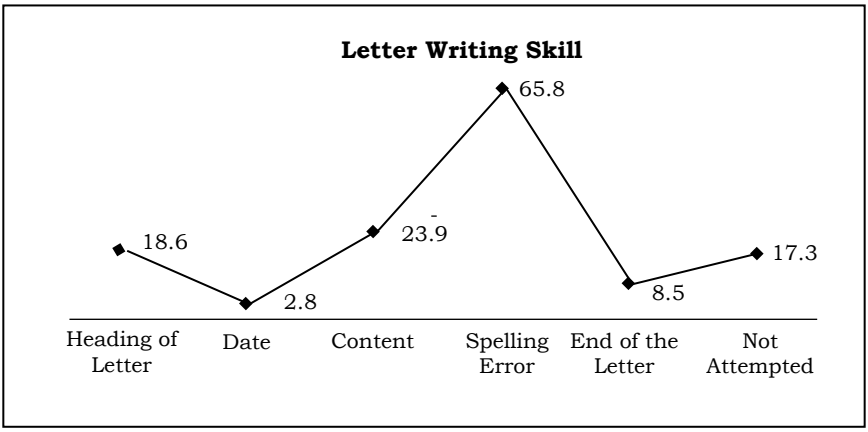

Figure 2

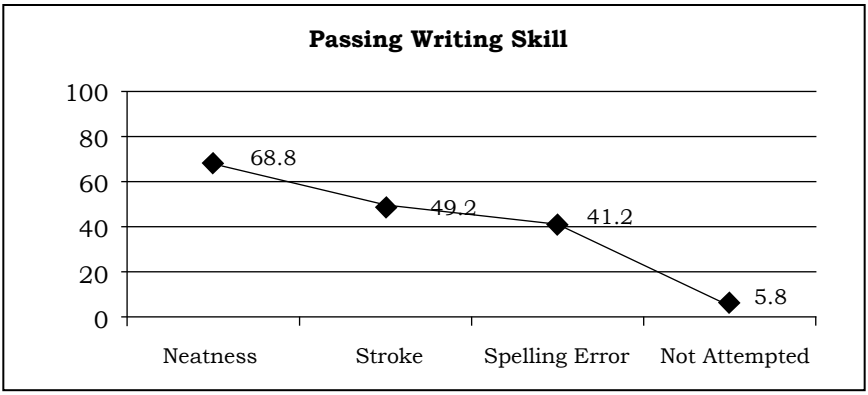

Figure 3

The study followed Item Response Theory (IRT) model for analysis and decided to determine item difficulty level of each item. The study categorised learning outcomes competency wise and item wise for viewing response distribution pattern. About 44 per cent students worked out questions of knowledge competency meaning that 56 per cent failed to locate the information. Understanding competency had six items. Of them five items were moderate while the remaining one easy. About 44 per cent respondents could solve the questions of understanding. A large segment of them (56 per cent) missed to hit the correct answer. A descending trend of learning outcomes was noted in case of skill and application competencies (about 35–36 per cent). In case of skill competency the results were not encouraging. By the same token, four items were reported difficult while the remaining two easy. Only 36 per cent respondents could apply basic skills to answer the questions correctly. On average respondents had fewer tendencies to guess the correct answer (about 4 per cent). A sizeable number of students (about 33 per cent) could not answer the questions correctly. About 23 per cent students did not attempt the questions. Altogether, about 60 per cent students missed to answer the questions correctly at the state level.

Family Background

The study attempted to categorise achievement scores in terms of parents' occupation and education. Of 398 students 236 had a family background where father was labourer, 78 had a family background where father small farmer and 25 where father was

skilled worker. Their learning outcome varied from 36 to 43 per cent. Father's educational level was also categorised. Around 133 of them were illiterate, 98 had education up to primary level and 88 up to middle level. Remarkably, students having illiterate father secured about 43 per cent marks in Hindi language as compared to others who had school education (about 39 per cent) showing more interest in rejoining of schools for education. More or less similar trend was found in case of mother. About 51 per cent students' mother were illiterate, 28 per cent had primary school background and only 9 per cent had completed elementary education. Illiterate mothers had strong desire to educate their daughters (40 per cent achievement in Hindi language). A similar desire for educating the daughters was noted in the literate mothers. Probably, growing realisation of girls' education in the society motivated illiterate mothers to send their girls for schooling. Another attempt was made to ascertain where any educational background of family members supported the appetite for educating the girl child. The data revealed the fact that about 50 per cent family members had secondary/higher secondary education. It supported the education of the girl child (about 40 per cent achievement in Hindi language). Even the family members who had education up to primary level motivated the girl child for rejoining the school (about 59 per cent achievement in Hindi language).

Teachers

The study noted acute shortage (46 per cent) of part time teachers in KGBV. There existed no language-specific teachers. Instead they were inducted on the post of language teachers irrespective of professional qualification. Previous studies (NER, 2013; PEO, 2015) on KGBV witnessed multiple activities of KGBV teachers. They were engaged in hostel management in addition to teaching. They had inadequate training to teach (PEO, 2015) depriving them of getting learning activities based on group formation. About half of them had time-table of classes for KGBV students. Group formation was an important exercise in all KGBVs. Many of them formed group either on the basis of grade as recorded at the time of admission (48 per cent) or level of knowledge after evaluation (33 per cent). Hence, they promoted their students accordingly from one group to another after continuous evaluation (45 per cent) but, could not place substantive evidences of promotion. They assessed their students after admission

(65 per cent). There was no standard format of evaluation for group formation. Even there existed inconsistency in displaying and updating child profile. The study disclosed some unusual facts. Only 50 per cent teachers used to study Hindi textbook of Class VI before engaging classes. About 50 per cent did not know the number of units in Hindi textbook. About 60 per cent teachers spent about one hour in teaching Hindi. When asked about last unit of Hindi textbook taught in the school by the teachers, 55 per cent had no idea about it. Lack of interaction with the school teachers was evident in the sense that a few (40 per cent) had information about the units taught by school teachers. Only 40 per cent teachers kept monthly progress. About 45 per cent teachers got feedback from students about school activities.

Though they had identified problems in Hindi language (about 70 per cent), less activities to improve it were noted (about 50 per cent). In some KGBVs (e.g., Kishanganj) there existed minimal activities to overcome learning deficiencies in Hindi. No proper training to Hindi teachers in KGBVs were provided. They had virtually no idea about how to evaluate students and formulate plan for improving Hindi language. KGBV teachers could not properly track month-wise distribution of units to be taught by school teachers, subject wise monthly progress report of the student and progress in Hindi language. Instead of getting feedback on the units taught by the school teachers they relied on students' saying.

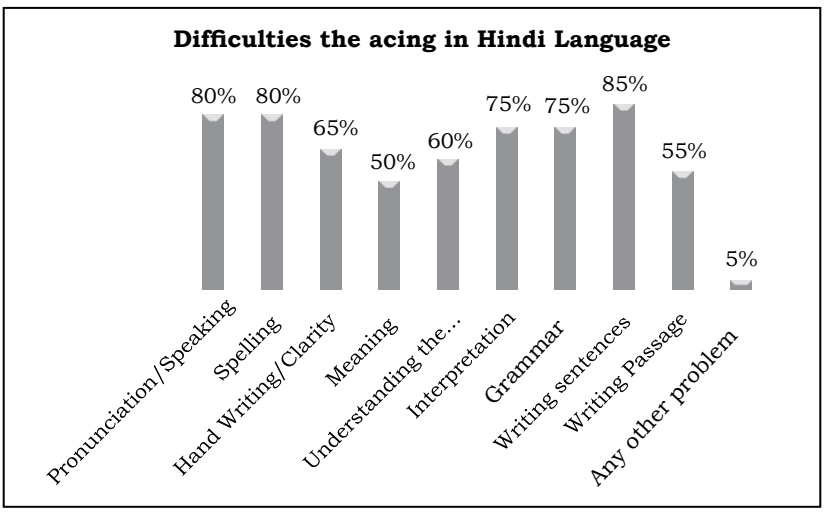

Figure 4

KGBV Management, Warden and Headmaster

The KGBV management used multiple sources, such as block and panchayat for fresh admission. The management was expected to be aware of the concept — the drop out under the state rules RTE notification, 2011. There existed–ambiguity on the concept—drop out among stakeholders. Around 55 per cent wardens had an idea of the drop out students who were absent from the class for more than six months. Around 45 per cent respondents had an impression of absence from the class for either one or three months. Previous studies confirmed this pattern (PEO, 2015). Confusion also prevailed in their mind, when asked about direct admission in class VI. They frankly admitted that 55 per cent students were directly admitted in Class VI. Around 35 per cent studentls were admitted after evaluation. Panchayat played a vital role in the fresh admission as they (50 per cent) recommended the application for KGBV. A similar pattern was evident in the previous evaluation studies (NER, 2007, 2013). Altogether 748 students were enrolled in Class VI. Of them, 49 per cent shared Class V, 11 per cent Class IV, 7 per cent shared Class III and 3 per cent shared Class II. The warden assumed a managerial role in KGBV. Almost 55 per cent OBC category wardens were working whereas, one ST category warden made her presence felt in the centre. Of them 70 per cent were graduate. About 40 per cent of them used to teach Hindi language. In some cases they spared some time for other subjects. Performance appraisal of the students was an important activity in KGBV. About 65 per cent wardens kept subject-wise monthly progress report of students.

School headmasters extended their support as *Sanchalak* and facilitated functioning of the warden. A few relevant information were extracted from them to assess activities of KGBV students in the school. The study witnessed loss in transition from Class VI to Class VIII (about 6.60 to 24 per cent) in KGBV. The girl students left out KGBV because of many reasons. Of them KGBV poor management was more prominent. Because of the restricted hostile environment and its poor delivery mechanisms a large number of girl students left their study from KGBV at various time intervals. It was surprising to note that KGBV students could not cope with the changing situation where they were expected to adjust. The study also observed that students were allowed to go home during holiday. Many of them overstayed at their home and did not return to KGBV. Attitudinal problem of the school teachers and

headmasters were the prominent issue. They attributed to the KGBV stakeholders for the managerial activities. Where the coordination between the school and KGBV was observed, the latter performed well. Whatever resources they had, were properly utilised by the stakeholders. Despite a circular of engaging at least one class in the school by KGBV teacher the school did not take it seriously and kept them away from the school. A few KGBVs run under NGO. Their management was questionable in the sense that they maneuvered the situation to grab resources. An intense interaction with the school teachers may reduce attitudinal problems as was noticed in the study. KGBVs had acute shortage of teachers and auxiliary staff. Another constraint was temporary stay of teachers in the KGBV. As soon as they get another assignment they quit, resulting in sudden vacuum in KGBV. Many of them joined the formal school as they were professionally qualified.

Summing up

The study attempted to find out reasons of low performance in Hindi language. It had two facets. First, the nature of test and its administration and second, mismatch between the teaching process and the learning ability. In case students were alien to the test, there could be a possibility of lowering down the performance. A few negative questions posed problems to elicit correct answer. Even guessing tendency was high in case of negative questions. They were not aware of grammar while speaking or writing. Hindi language was compatible with the mother tongue. It often restricted to learn Hindi language. It was more visible in case of border districts like Kishanganj and West Champaran where either minority or ST/SC was dominant. In Kishanganj 26 (65%) out of 40 students were Muslim.

Bridge course materials need to be developed to reduce learning deficiencies resulting from gap in schooling. At the same time teachers as well as wardens require to be trained. There should be recurrent training programme to KGBV teachers. Assessment of learning deficiencies is an important exercise at the KGBV level. There needs to be some standard procedures for assessing learning difficulties of students and grouping them accordingly. This requires thorough training of teachers as well as wardens. In addition to organising any training programme to KGBV teachers, there should be a substantive arrangement of engaging classes in the school. Previous studies also suggested the same inputs

(NER, 2013, PEO, 2015).Another related problem was to get insufficient inputs of teaching during the job. Teachers and auxiliary staff need to be appointed at the block level. The child protection demands a security management. Since they are the deprived girls coming from a poor family background, they can be readily exploited at any level.

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*This study was completed with the help of UNICEF, Patna and SCERT, Patna in the month of November, 2016. We are thankful sssssto Mrs. Parul Sharma, Education officer and Dr, SM. Moin, Director, ODL, SCERT, Patna for their cooperation.

Assessment of Students' Achievement in Life Science through Different Evaluation Strategies: Examining the Influence of Teacher Competence and Teaching Effectiveness

SARMILA BANERJEE*

ABSTRACT

In the present paper efforts were made to study the assessment of achievement through different evaluation strategies. Twenty-one secondary schools of four boards of Birbhum and Burdwan districts of West Bengal were selected through stratified random sampling technique. The Boards were: West Bengal Board of Secondary Education (W.B.B.SE), Visva Bharati(V.B), Indian Certificate of Secondary Education (I.C.S.E) and Central Board of Secondary Education (C.B.S.E). A total of 564 students from Class VIII participated in the study. All the Life-Science teachers were also taken as sample. Tools used were standardised tests (i) 'Teacher Competence Scale' developed by Passi & Lalitha, 7-point scale, (ii a) A standardised 'Teacher Effectiveness Scale' by U. Kulsum, a 5-point scale and a self-assessment questionnaire, (b) Observation Schedule to measure the teaching effectiveness, (iii) An achievement test for Class VIII (Pre-test in Life Science). Statistics used were Mean, S.D., t-value, One-way ANOVA and Interaction analysis. The role of teacher competence and teaching effectiveness in high achievement (in Life-Science) irrespective of the different evaluation strategies used were examined. The study gave indications about the relative suitability of these strategies used in measuring the students' performances in Life science subject.

Keywords: *Evaluation, Students' achievement, Evaluation strategies, Teacher competency, Teaching effectiveness.*

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Introduction

Teaching is a unique professional, rational, and humane activity in which one creatively and imaginatively uses himself and his knowledge to promote the learning and welfare of others. It consists of four phases — a curriculum-planning phase, instructing phase, a measuring phase, and an evaluating phase. To sensibly create a curriculum for teaching, one must have the understanding of the goals of education and a clear formulation of specific objectives. One must also select subject matter appropriately to achieve these ends. Actual instruction involves creating, using, and modifying instructional strategies and tactics in the classroom. In this way the teacher can help his/her pupils to acquire skills in different subject areas. The teacher's task here is two-fold — to offer skills in his subject discipline and also to use various ways and means to aid his pupils to learn how to employ their own talents to acquire the skills that the teacher wishes them to acquire. In this context, the teacher's personal qualities, educational qualification, professional training and the place that he/she occupies in the school as well as in the community assume significance (Secondary Education Commission, pp. 1952-53).

For knowing the outcome of students' learning, evaluation must be done with as much care as possible. Without evaluation we really don't know how much the students have learned. Needless to mention that evaluation has to be very comprehensive in a system of education which aims at the many-sided development of the personality of a child. This study focusses on achievement in Life Science subject and different evaluation strategies used for assessment, such as — i) written test, ii) Oral test, iii) Project work. In view of the importance of the Science subject in the school curriculum and the typical pattern of assessment applied using the paper-pencil test only, the study intended to find out the relative suitability of the three most common strategies used for evaluation of the students in Life Science subject and also on the role of assessment by different measures and the teacher. The need and significance of this study was to identify which evaluation strategies were most appropriate and also the impact of teachers' competency and teaching effectiveness irrespective of the evaluation strategies on students' achievement in Life Science subject. The districts of Birbhum and Burdwan in West Bengal were considered to be a relatively unexplored area. The three major evaluation strategies (oral, written, project) were undertaken to evaluate the students'

performances in Life Science subject in schools under the four boards of the State of West Bengal (i.e., V.B., W.B.B.S.E, I.C.S.E. and C.B.S.E).

Research studies have been done related to this field to enhance the quality of education in the school in different parts of the world. The study by Wright, Horn, Sandra, Sanders and William (1997), found that the teacher effects are dominant factors affecting student academic gain and that the classroom context variables of heterogeneity among students and class sizes have relatively little influence on academic gain. Further, Ding, Cody, Sherman, Helene (2006), also in their study, found a relationship between teacher effectiveness and students' achievement as measured by test scores and suggested that direct causal relationship among teacher preparation, teacher quality and student achievement. It stressed that test scores correlate to the quality of teaching effectiveness as policy makers and public and private funding agencies believe. Mohalik (2008) found that there is impact of ISTE on teacher effectiveness of English teachers and achievement of their students. Regarding evaluation, Raizada, (2000) highlighted the importance of evaluation in the teaching-learning process (which is an in-built component and determines the learner's progress in achieving the course objectives) and Sreekanth (2006) emphasised the necessity of more varied modes of assessment beyond one examination hall paper-pencil test. Suggestions for including oral testing and group work evaluation were also offered. Similarly, Sharma (2007) focussed on 'Alternate Assessment Procedures', about the importance of assessment technique to evaluate students' knowledge (and suggested that flawed technique may have a serious repercussion on the child's psyche and their overall development). Vijayan (2014) also emphasised on the administration of peer-assessment, self-assessment and quiz as classroom assessment strategies in an integrated way which helped the teacher to get a clear idea about the level of performance of individual students in a particular topic and thus to make assessment as an integral part of teaching learning process. As conventional mode of pupil assessment is still being practiced but new assessment techniques have been developed on the line of the recommendations of various education commissions. The NCF-2005 also recommends flexibility in pupil assessment and makes it as an integral part of teaching learning process, which is possible with the help of a competent

and effective teacher. Therefore, the investigator after analysing the different studies found out the necessity of her study.

Scope of the Study

This study was done only in selected schools of Birbhum and Burdwan districts of West Bengal State. Such study has a large scope taking into consideration different dimensions and a variety of clientele groups. This study can be done, taking larger samples from a wider population to gain more insight into the problem area. It can be done in other states and their schools. Comparative studies can be done to compare the findings of different regions and it can be carried out taking any other school subject in the syllabus of secondary education than Life Science only. Different evaluation strategies can be applied for assessment of the subject concerned.

Objectives of the Study

The objectives of the present investigation were:

i. To find out the effect of teachers competencies on students' achievements in Life Science.
ii. To study the effect of teaching effectiveness on the students' achievements in Life Science.
iii. To assess the students' achievement in Life Science subject through different strategies of evaluation.
iv. To find out the interaction effect of teacher competence and teaching effectiveness on students' achievement in Life Science as measured through different evaluation strategies.

Hypotheses

The following hypotheses were formulated for the study:

i. There is positive effect of teacher competency upon students' achievement in Life Science irrespective of strategies of evaluation.
ii. There is positive effect of teaching effectiveness upon students' achievement in Life Science irrespective of the strategies of evaluation.
iii. The interaction effect of teacher competence and teaching effectiveness on students' achievement in Life Science as measured through three different strategies of evaluation is significant.

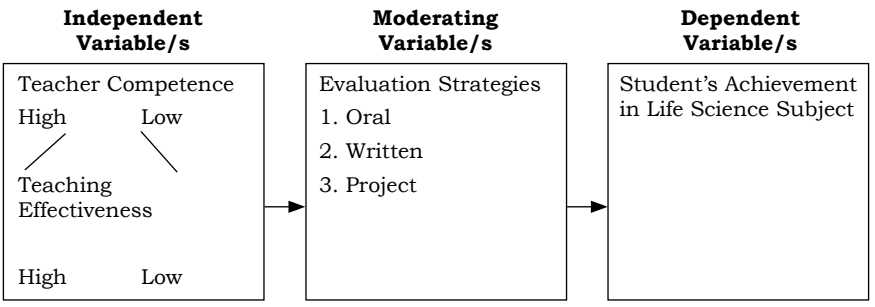
Method

Research Design: Employing a 2x2 factorial design in this experimental research, subjects were randomly assigned to one of the two categories of teachers under high and low teacher competence and teachers with high and low teaching effectiveness.

The Variables in the Study were —

1. Teacher Competency _____ Independent variable/s: High & Low
2. Teaching Effectiveness _____ Independent variable/s: High & Low
3. Different Evaluation Strategies — Moderating Variable
4. Students' Achievement in Life Science subject — Dependent variable

CONCEPTUAL MODEL



Population of the Study

The students of Class VIII of the schools of Birbhum and Burdwan districts of W. B.B.S.E, CBSE, ICSE, and V.B boards and their Life Science teachers constituted the population.

Sample and Sampling

Twenty-one (21) urban secondary schools of Birbhum and Burdwan districts were selected through stratified random sampling. The students of Class VIII of these schools participated in the study. Simple random sampling technique was used for the selection of subjects in the study. Life Science teachers teaching in Class VIII of these schools were also included in this study. Four boards under West Bengal state were taken for the study; they were W.B.B.S.E, V.B, I.C.S.E. and C.B.S.E. First of all, the schools under

W.B.B.S.E, I.C.S.E. and C.B.S.E. in each of the two districts under study (Birbhum and Burdwan) were enlisted separately. Then from among six (6) lists of schools (three (3) in Birbhum and three (3) in Burdwan schools were selected randomly though random sampling technique was resorted to in selecting the schools in each stratum, ultimately schools under each of the above-mentioned boards were selected according to their availability in the districts). Nineteen (19) schools under above-mentioned three boards were taken for the present study. As there are only two schools under Visva-Bharati (Birbhum district), those two were included in the study.

Thirty-five (35) teachers of Life Science from the twenty-one (21) schools were included in the present study. All the Life Science teachers in the selected schools were taken for the study; no sampling was done in selection of teachers.

Total 564 students were selected as the student-sample for the present study. Selection was done by administering a Pre-test in Life Science subject (with the help of Life Science teachers) for Class VII to test the previous knowledge of the students gained in Life Science. The results of pre-test were used to classify the students according to merit. The cut-off marks were decided to be 30 out of the total marks 50 as the criteria for selection. The students obtaining 30 and above were taken as the sample-students of the present study (this was done to equate the students of Class VIII in respect of merit).

Tools Used

The tools used were—

1. General Teaching Competency Scale (GTCS) by Passi and Lalitha (1994) was used to measure the teaching competency in five major areas on a 7-point scale. The areas were — i.e., (i) Planning (Pre-instructional), (ii) Presentation (Instructional), (iii) Closing, (iv) Evaluation and (v) Managerial.
2. 'Teacher Effectiveness Scale' by Kulsum (2000) was used to measure the teaching effectiveness in five major areas on a 5-point scale and a self-assessment questionnaire.
3. An Observation Schedule also developed to assess the teaching effectiveness. It was standardised. Validity and reliability were tested. It is a 5-point scale and covers nine areas of teachers' classroom skill during teaching.

4. An achievement test for testing the previous knowledge of the students of Class VIII in Life Science (Pre-test in Life-.Science).
5. Three types of tests for evaluating selected students' achievement in Life Science (after a specified period of teaching-learning) following three different strategies (Post-test in Life Science). Reliability and validity were established. Expert opinions were taken regarding the content of the tests.

Data Analysis and Interpretation

The first and second hypotheses were tested to find out the effect of the two independent variables on the students' achievement scores evaluated through different evaluation strategies (separately). This was done with the help of Analysis of variance (one-way ANOVA). The third hypothesis was framed to find out the impact of the Interaction effect of the two Independent variables, i.e., teacher competency and teaching effectiveness on the Students' Achievement (dependent variable), measured through three strategies of Evaluation with the help of two-way Analysis of Variance.

Results

Table 1 shows the result of Analysis of variance concerning the impact of teacher competence in relation to the strategies of evaluation. The mean achievement scores of Group 1 students (i.e., students taught by teachers with high competence) was not significantly higher than the mean achievement scores of Group 2 students (i.e., students taught by teachers with low competence) irrespective of strategies of evaluation. However, in case of project work only, there was a significant difference between the means of students taught by teachers with high and low competence which indicates that students under teacher with high competency achieve better than students taught by teachers with low competency.

Table 1

Analysis of Variance Showing the Effect of Teaching Competence on Students' Achievements in Life Science

Strategy	Competence of Teacher	N	Mean	Variance	'f' value
Written Test	High	267	23.1124	80.55124	1.202574
	Low	100	22.02	49.71677	(df= 1,365)

Project Work	High Low	267 100	24.2622 21.25	65.58514 55.96717	10.48158* (df= 1,365)
Oral Test	High Low	267 100	36.3894 36.2	15.29132 21.37374	0.154235 (df= 1,365)

**P<.05*

The results related with hypothesis 2, regarding positive impact of teaching effectiveness upon students' achievement in Life Science subject irrespective of the strategies of evaluation are given in Table 2. The mean achievement scores of Group 1 students (i.e., students taught by teachers with high teaching effectiveness) was higher than the mean achievement scores of Group 2 students (i.e., students taught by teachers with low teaching effectiveness) irrespective of strategies of evaluation. Table 2 shows significance of f-values in case of strategies S1, S2, and S3 with regard to teachers with high and low teaching effectiveness (at 0.05 level of significance).

Table 2

ANOVA-Single factor Table of 'F' value for High and Low Teaching Effectiveness

Strategy	N	Mean	Variance	'f' value
S1 Gr 1 Gr 2	51 467	27 23.04069	83.52 67.0992	10.49305*
S2 Gr1 Gr2	51 467	27.19608 23.52891	68.32078 61.85914	9.895594*
S3 Gr 1 Gr 2	51 467	38.29412 36.51178	15.61176 19.62808	7.592037*

**P<.05*

S1 = Written test, S2= Project test, S3= Oral Test

G1= High teacher effectiveness, G2= Low teacher effectiveness

As there are significant mean differences between the means of Group 1 and Group 2 when evaluated through all three strategies (S1,S2,S3), it can be inferred that students under teachers with high teaching effectiveness achieve better than students under teachers with low teaching effectiveness irrespective of the strategies of evaluation.

The results related to hypothesis 3, (Table 3) are that the Interaction effect of teacher competence and teaching effectiveness on students' achievement as measured through three different strategies

of evaluation is significant. The null hypothesis H03 is that the interaction effect of teacher competence and teaching effectiveness on students' achievement as measured through three different strategies of evaluation is not significant. The consequences are that the mean achievement scores of students in Life Science subject taught by teachers having both high teacher competence and high teaching effectiveness and students taught by teachers having both low teacher competence and low teaching effectiveness are significantly different as measured through all three strategies of evaluation.

Statistics Applied— Two-way ANOVA with interaction. (f-Statistic at 0.5 level of significance).

Table 3

Interaction Analysis (T/Comp.*T/ Effec) (From- R Prog.)

Strategy	Source of variation	Df	Sum of squares	f
S1	Competence	1	56	0.860
	Effectiveness	1	886	13.642*
	Competence X Effectiveness	1	1,761	1760.58**
	Residual	510	33,138	-------
S2	Competence	1	2,591.3	44.4003**
	Effectiveness	1	338.2	5.7953 *
	Competence X Effectiveness	1	153.1	2.6234
	Residual	510	29,765.1	-------
S3	Competence	1	75.218	4.0295
	Effectiveness	1	122.185	6.5456*
	Competence X Effectiveness	1	281.273	15.0682**
	Residual	510	9,594.7	--------

**P<.05 **P<.01*

Where,

S1=Strategy 1 of evaluation; written test; S2= Strategy2 of evaluation; Project test; S 3 =Strategy 3 of evaluation; Oral test

It is evident from the Table3 that the Interaction effect of Competence and Effectiveness on students' achievement in case of S1strategy is highly significant, as the value of 'f' ratio for df (1,510)

is 1760.58 (with $p<0.01$) which is much higher than the table value at .01 level of significance.

The Interaction effect of Competence and Effectiveness on students' achievement in case of S2 is not statistically significant, as the value of 'f' ratio for df (1,510) is 2.6234 which is lesser than the table value at 0.5 level of significance.

The Interaction effect of Competence and Effectiveness on students' achievement in case of S3 is highly significant, as the value of 'f' ratio for df (1,510) is 15.0682(with $p<.0001$) which is much higher than the table value at 0.5 level of significance.

Thus, it may be interpreted that, the Interaction effect of Competence and Effectiveness on students' achievement is statistically significant in case of Written and Oral tests but not in case of Project test. Thus it can be said that $H0_3$ is retained; in other words, and H3 is rejected.

Further attempts have been made to verify the achievement scores of the students studying in schools, under each of the four boards (V.B, W.B.B.S.C., I.C.S.E. and C.B.S.E) separately. The investigator intended also to judge the relative effectiveness (suitability) of three strategies for evaluating the students' achievement in Life Science subject by finding out the difference in the achievement scores of the students undergoing tests following each of the three strategies. The evaluation strategies have been taken as the moderating variable in this study. Obtained data were analysed through't' test, so that significance of difference between students' Mean Ach. Scores through any two evaluation strategies were found out. Similar results were found from the analysis of data that there are significant differences in students' achievement scores in Life Science as evaluated through Project test and Oral test and also as evaluated through Written test and Oral test.

In each of the cases the mean achievement scores of Oral test was found to be greater than those of Project test and Written test under the four boards mentioned V.B., I.C.S.E., C.B.S.E. and W.B. Boards, (mean for S3 Oral is 34.56 and value of 't' is 22.02 in case of V.B. Board, value of mean for S3 in the case of I.C.S.E. is 36.06, value of mean for S3 in the case of C.B.S.E. is 35.94, in case of W.B. Board, the mean for S3 oral is 37.75), indicating the fact that students' performance is probably better when evaluated through Oral test; in other words Oral strategy of students' performance as expressed through the achievement scores taken into consideration

is probably a better strategy for evaluating students' performances in Life Science subject for Class VIII.

Major Findings of the Studies

On the basis of analysis, the following findings were made—

i. As already known and established, the achievement of students do differ significantly in Life Science subject when taught by high or low competent teachers and by teachers with high teaching effectiveness and low teaching effectiveness. There is a substantial positive relationship between teacher competence and teaching effectiveness as found through the research study (product-moment correlation)

ii. The findings in this study indicate the fact that the students taught by teachers with high/low teacher competency do not achieve better in S1 (written) and S3 (oral) strategy but in case of S2 (project) strategy there is significant mean difference between the means of Group 1 and Group 2 which indicates that students under teachers with high teacher competency achieve better than students under teachers with low teacher competency in case of project test.

iii. Findings also indicate that there are significant mean differences in achievement scores of students as evaluated through S1(written), S2(project) and S3(oral), between Group 1 and Group 2 which indicates that students' under teachers with high teaching effectiveness achieve better than students' under teachers with low teaching effectiveness in case of all evaluation strategies used.

iv. The findings indicate that the interaction effect of teacher competence and teaching effectiveness on students' achievement is highly significant. Interaction analysis is found highly significant (at .001 level of significance).

Conclusion

Quality of learning in schools depends on the quality of teachers. The crucial role played by the teacher in bringing about meaningful educational change and thus the importance of teachers is recognised in educational reform. The teacher is the key to educational quality. Excellent curricula, materials, infrastructure and administration will not improve the quality of education if the quality of teaching is poor. These teachers are of the challenge

of the broader social contexts in which they teach, have a clear sense of identity and believe that they can make a difference in the achievement of their pupils.

The study investigated the students' achievement measured through different evaluation strategies which act as moderating variables and found that the achievement measured in Life Science subject was better by the Oral strategy in Class VIII of the schools under all the four boards mentioned (V.B., I.C.S.E., C.B.S.E. and W.B. boards taken for the study). Students' achievement in Life Science subject was found better under highly competent teachers with high teaching effectiveness. To conclude there is the need to view assessment as an aspect of learning and it should be emphasised as an integral part of the teaching-learning process and can be used to improve learning. NCF-2005 has focussed its attention on the role assessment might play in the promotion of learning and has recommended continuous comprehensive assessment suggesting flexibility in the assessment procedures and to be used constructively to measure learning outcomes and subsequently raise standards. The results indicate the Oral strategy used was better for the assessment of students in Life Science subject for Class VIII of selected schools in Birbhum and Burdwan districts of West Bengal; therefore, Oral tests should be introduced and encouraged in schools of all the four boards mentioned. This study will be valuable regarding considering the importance of assessment of students through different evaluation strategies.

Educational Implications

In this context, the major educational implications based on the findings of the present study are as follows—

1. High teacher competency and high teaching effectiveness have significant positive impact on students' achievement in Life Science and have to be nurtured among the teachers of Life Science by teachers training programme. As teacher competency and teaching effectiveness are positively correlated shown by research; it is obvious that teacher competency factors are related to teaching effectiveness.
2. Findings of the present research show that the achievement of Life Science in Class VIII is better evaluated through the Oral strategy. Hence, Oral test should be given due importance in evaluation of students' achievement in Life Science at least in lower secondary stage/upper primary stage of school education.

3. In case of interaction effect it is clear that both teacher competency and teaching effectiveness variables have effect on students' achievement as measured through written and oral tests. Thus, it can be said that teacher competency and teaching effectiveness jointly affect the students' achievement as reflected through their achievement scores when two popular strategies of evaluation (written and oral) are followed. So school management should work on the direction to recruit trained teachers who are competent enough to teach effectively and also are well versed in evaluating students' achievement in Life Science through different strategies.
4. Oral test/oral strategy as an evaluation technique for assessing students in the concerned subject should be introduced in the upper primary section of V.B., C.B.S.E. and I.C.S.E. board schools to improve the students' spontaneity in answering questions and also student's critical thinking.

Suggestions for Further Research

This study claims no completeness due to a critical problem that the findings of this study are valid for a particular region of West Bengal only and it was done in selected schools of Birbhum and Burdwan districts.

This study could be done; taking larger samples from a wider population to gain more insight into the study and it could be done in schools of other states. A comparative study could also be done to compare the findings of different regions. Further, it was not possible for the investigator to consider all variables that might account for the students' achievement in Life Science subject; only qualities of teachers, were taken into account. Other conducive factors behind high achievement of the students in Life Science might be there. Though the students were equated according to their merit, some other factors like parental awareness and care for their wards' education, infrastructure of the schools, were not strictly controlled. Similarly studies can be carried out taking any other school subject in the syllabus of Secondary education.

A longitudinal study of observation of the teachers' behaviour can be done to find out their impact on students' achievement in different subjects of the school curriculum. This study can help the teacher to make assessment an important part of teaching and learning. It also helps teacher-educators in discovering

ways in which teachers should be trained to teach effectively so as to improve the achievement of students in all subjects of the curriculum.

Acknowledgement

I am grateful to my guide Dr. Namita Das, Dr. Atasi Mohanty and Dr. Chinara (editing), Visva Bharati for conducting this study.

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Summary of ERIC Projects

An In-depth Study of the Implementation of Hindi Language Curriculum at Upper Primary Stage

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INTRODUCTION

Hindi language education in India is large and diverse in terms of its size, place and role of the language. Besides being the official language of the country, Hindi is spoken by the largest number of people in the country and serves as a medium of instruction in schools. It is taught as a first, second and third language in different school systems. Curriculum development and materials for teaching-learning of Hindi at school level is carried out at various levels. The National Curriculum Frameworks developed at the national level serve as a model curriculum for the States/ UTs while the states have freedom to adopt, adapt or develop their own curriculum. The recent curricular revision in India, National Curriculum Framework (NCF–2005) (NCERT, 2005), provides guidelines for marching towards the goal of quality education for all children in school. In its call for the spread of equitable quality education, the NCF–2005 stresses the need for a paradigm shift in the way of planning and implementation of various aspects of education (which includes teaching-learning, assessment and other activities in and outside school). The Position Paper on Teaching of Indian Languages by the National Focus Group (NCERT, 2005) deliberated on the problems and issues of teaching of Indian languages in the multilingual contexts, besides suggesting methods and strategies for improving the quality of language teaching in the variety of teaching situations that exists today. There exist varieties of language teaching situations in India depending upon the teachers' language proficiency and pedagogical knowledge, language environment, resources for teaching learning of the language, and so on.

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Introduction

As the National Education Policy (NPE) 1986 and the Programme of Action (PAO) 1992 indicate, the national curriculum needs to be revised at regular intervals for bringing in the desired changes in the curriculum and materials. Therefore, there is a need to study how far the ideas and recommendations of the curriculum have been realised in different school contexts. The new pedagogies and methodologies suggested by the language curriculum and the materials developed as a follow up to NCF-2005 has been in practice for about seven years now. It is felt that this is the time to examine the extent to which the Hindi language curriculum in school is working. The Position Paper on Teaching of Indian Languages (NCERT, 2005), in its recommendations, also calls for research-based evidences for quality language education through curriculum and materials. It is in this context that the present research studied the extent to which the language curriculum has been implemented in different school systems in terms of understanding the ideas of NCF-2005, objectives of language education at different stages of school education, effectiveness of materials for teaching of Hindi, classroom processes and assessment procedures. The study attempted to identify the implementation of Hindi language curriculum in various types of schools at the national and state levels through an analysis of the syllabi and textual materials. An exploration into the teaching-learning processes was made to find out as to what extent the new pedagogies/methodologies suggested by NCF-2005 are being implemented by teachers. Also, the study collected and analysed the perception of teachers, learners (of secondary level) and parents on the existing practices of Hindi language education.

Objectives

1. To study the implementation of Hindi language curriculum in various types of schools at the national and state levels through—
   (i) an analysis of the syllabi and textual materials of Hindi language education at upper primary stage of school education.
   (ii) an exploration into the teaching-learning processes to find out to what extent the new pedagogies/methodologies suggested by NCF-2005 are being implemented by the teachers.

2. To collect and analyse the perception of teachers, learners (of secondary level) and parents on the existing practices of Hindi language education.

Research Questions

The following research questions were addressed in the study:

1. To what extent has the Hindi language curriculum been implemented in schools at the national and state levels as recommended by NCF-2005? what are the processes involved for the development and implementation of Hindi language curriculum and syllabus at national and state levels at the upper primary stage?
2. How are the materials for teaching-learning of Hindi developed? Do the materials fulfill the objectives as stated by the curriculum and syllabi?
3. What are the perceptions of teachers, learners and parents about the existing practices of Hindi language education?
4. What are the teaching-learning processes followed in the Hindi language classroom? Do these reflect the new pedagogies/ methodologies suggested by the national curriculum? Has the teacher been oriented (both on pedagogy and content) to achieve the objectives of Hindi language education as perceived by NCF-2005; what are the processes of language assessment in different school systems? How is assessment practiced in the Hindi language classroom?

Methodology

The proposed study adopted both qualitative and quantitative approaches for collection of data. For this study five states were selected—Bihar, Odisha, Chattishgarh, Kerala and Haryana. In each state few schools from rural and urban were selected. Around 23 urban schools and 17 rural schools were used for the study. One Navodaya School was also selected for the study. The following criterion was followed for the selection of states—(i) States which have adopted curriculum developed by NCERT following NCF-2005 directly; (ii) States which have adapted with modification; (iii) States which have developed their own curriculum-based on the ideas of NCF.

Tools used in the study were—analysis of curriculum and courses of the school, learning and interpretation form, questionnaires for the students, questionnaires for the teachers related to syllabi, and classroom teaching observation.

Findings of the Study

The curriculum framework syllabi and textbooks were developed in the states of Kerala; Bihar according to their needs following NCERT-2005. The curricular of these States reflect creative outlook and critical pedagogy.

The NCERT of different states had developed the study materials for Hindi language teaching. However these materials and courses had not been able to fulfil of the objectives of NCF-2005.

The textbook developed by the states of Odisha were found to be less effective in terms of subject matter and presentation as compare to the other states. Hindi is taught at upper primary stage in the states of Kerala and Odisha as third language while it occupies the position of first language in the states of Haryana, Bihar and Chhattisgarh.

It was found during classroom observation that teachers were still using the traditional method of teaching, though textbook content activities and project works. Teachers did attempt to follow continuous and comprehensive education. However they lacked innovation and originality. The study also showed lack of teacher training programme in the states and some of the teachers had not even heard about NCF-2005.

About one-thousand students filled up the questionnaires required information related to the teaching of Hindi language. It contained information related to classroom transaction, available Hindi textbook, Hindi teacher and evaluation methods and students relationships. These students come from rural and urban areas, Government and added schools, Kendriya and Navodaya Vidlayas.

All the students reported that computers and ICT are not used in Hindi language teaching. Classroom observation showed that reading skills of the students were very poor. The same case was with the writing skills. These findings were more prominently observed in the states of Kerala and Odisha. The students from these states do not have access to additional reading materials in Hindi at their homes or at their schools. In the states of Kerala it was found that teachers were teaching Hindi in Malayalam language. In some states like Haryana teachers pointed out some difficulties in teaching a few topics.

Teachers and students in almost all the states suggested that there should be a scope for doing more activities in the class and less emphasis should be given in writing. In Kerala and Odisha the students reported that a course material in Hindi was not interesting. The qualification prescribed for appointment of teachers in all the states was not similar. It was also found those teachers were not provided in-service training in Hindi subjects. The study suggested providing in service training to the teachers, encouraging them to use ICT and computer, use of audio video materials for teaching of Hindi, providing textbooks to the students which develop interest Hindi in them and so on.

Curricular Intention, Teachers' Comprehension and Transaction of Contemporary EVS Textbooks: A Study

Gurjeet Kaur* and Kavita Sharma**

Introduction

Enriched by emerging insights into children's learning, educationists are increasingly and universally acknowledging the importance of locating knowledge in the immediate contexts of children. The need for early learning to be holistic, immediate and unconstrained by artificial boundaries of disciplines is also being paid due heed to in framing the school curricula. In India since quite some time the need for early learning to be 'integrated' has been voiced at various fora and in different documents. Despite the policy rhetoric, however, actualising the idea of integration remained and still remains a challenge in a system too used to the 'subject' lens of looking at knowledge. Quite often, the efforts at creating 'integrated' textbooks culminated in isolated, insulated and atomistic concepts drawn from different areas and bound in a single cover. Environment a Studies for long was construed mostly as the study of natural and physical environment, heavily underpinned by the 'conservation education' or 'plantation' perspective. NCF-2005 was a documented endorsement of the contemporary and academically mature outlook in education. Significantly and critically informed by the reports of 21 Focus Groups, it touched upon crucial dimensions of school education and its processes. It forcefully brought into Indian academic discourse of school education the issues such as those of work and education, gender, curriculum, heritage crafts, marginalization, etc. It is not only the inclusion of these issues but the criticality, pointed focus and the studied minuteness in which they were addressed that calls for collective attention of the academia. For instance, instead of the paternalistic perspective on

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'work education' that considers promotion of 'dignity of labour' as its primary objective, the position paper of the Focus Group on 'Work and Education' goes beyond to consider work as a pedagogic medium and as an instrument of challenging the dominant groups' 'hegemony over curriculum'. In the same paper, the subtle usage of the term push outs instead of the traditional 'drops outs' for out of school children manage a radical shift in onus and orientation. Similarly, articulation of gender issues in the position paper of the Focus Group on Gender Issus in Education goes beyond the enrolment and retention concerns to evolve a feminist critique of the disciplinary knowledge and processes of schooling. The Focus Groups, taken in totality, thus created the intellectual firmament which was intended to serve as the edifice of ensuing structures and systems of teaching learning.

The curricula and syllabi framed by this perspective and the textbooks developed against this academic world view mirrored and expanded upon the intellectual insights offered therein. With such evolved sophisticated understandings having nurtured the curriculum and textbook development process, it is imperative that the thread of thought is carried forward in its truest sense and spirit by the implementers of this curricular idea if we are to have any hope for its influencing the system in any significant way. The present study is an attempt to ascertain the extent to which the curricular intentions inform the teaching learning process in classrooms by exploring the role of the teachers' understanding as the crucial mediating link and teachers as the interface between the intended and the enacted curriculum.

Environmental Studies: Scope and Perspectives

The Environmental Education has always been emphasised as an important component of school curriculum. The notion of Environmental Studies (EVS), however, has been developed on a wider canvas and with a much broader perspective. While it most certainly engages itself with sustainability and conservation concerns pertaining to the natural environment, it also includes within its purview the study of the issues of the socio-cultural environment. It further meanders beyond the 'what' of the study endeavour and carries with it the connotational implication as to 'how' the environment is to be studied and so it has come to be understood as—Learning about the environment; Learning through the environment and Learning for the environment. Following an

Integrated approach to teaching learning in early years has always been widely advocated in various documents. Kothari Commission (1966) recommended undifferentiated course of general education for all for the first seven years of schooling.

EVS has thus evolved as a composite curricular area that draws upon knowledge of different aspects of the world and it is premised on our understanding of young children. Young children begin to attempt to understand the world around them as soon as they enter it and interact with it holistically. They do not categorise, compartmentalise or label knowledge on the basis of its structure or form. It is therefore only rational that the early school curriculum also does not fragment knowledge but presents it as a seamless whole. However this leads to two other issues related to structuring of EVS curriculum—First, if Environment in EVS is understood a the entire social, cultural, physical and natural setting then the area of study becomes too vast and extensive and some kind of categorisation becomes inevitable to be able to do justice to it. The second issue that arises is that when EVS is regarded as the total environment of the child, how is it that mathematics and language continue to be taught separately and whether they do not exist in the environment of the child or whether there is some justification in terms of their being naturally different forms of knowledge.

Objectives of the Study

The overarching objective of the study was to examine the teachers' understanding and implementation of EVS textbooks in light of their curricular intention.

The broad objective consisted of the following sub objectives—

i. To study the curricular objectives of EVS as stated in the syllabus,
ii. To observe the transaction of the EVS textbook by the teachers,
iii. To understand the teachers' comprehension of the intended curriculum,
iv. To analyse the role of teachers as the crucial mediating link between the intended and the transacted curriculum,
v. To identify the gaps, if any, between the intended, comprehended and transacted curriculum, and
vi. To analyse the reason for these gaps.

Methodology of the Study

The study was analytical in nature and followed the following broad steps —

- Curricular objectives as stated in the NCERT syllabi for Class V were studied.
- Authors and the advisors of Class V textbook were interviewed to understand the philosophical backdrop of these books.
- Based on the above two steps, a template highlighting the various aspects of the textbook whose comprehension among teachers were observed.
- 100 EVS classes of six different schools were observed.
- Six teachers were interviewed regarding their understanding and assessment of the various aspects of the textbook.
- The data collected was reflected upon to understand any gaps in intention, transaction and comprehension of these textbooks.

The tools and techniques used were guided by the characteristics of the present study. Those were—Interview schedule for the advisor and author, Interview schedule for the teachers, classroom observations and analysis of NCERT syllabus for EVS for Class V.

Results and Discussion of the Study

The present EVS textbooks of NCERT, written in light of NCF-2005, may be seen as a culmination of the long cherished perspective of an integrated view of studying environment that does away with contrived compartmentalisation of knowledge into science and social science which young minds cannot be expected to appreciate. Taking a holistic perspective, these textbooks embed social and scientific understandings in specific contexts and it is the context which lends meaning to the tasks that would otherwise appear to be meaningless, decontextualise and as having little bearing on our real lives. The learner and her/his context is the absolute focus of these books. Children are encouraged to freely articulate their ideas and the teachers are also cautioned not to lay too much stress on the usage of the formal school language by the children. The books are socially responsive and raise some critical contemporary concerns that our society is presently staring at and the children are also most naturally drawn into the discussions and debates that centre around such live issues as full conservation.

Children are constantly encouraged to tap different sources for information. These sources could be their immediate environment, people around them—elders in family, people from the community, friends or the media. The teaching learning material that these books advocate and provide is authentic which means that the children are made to observe, handle and learn from real objects and experiences, the visuals are often real photographs or drawings which resemble realistic settings and the activities suggested require active interaction which the world outside of school and textbooks.

The present study yields some pertinent insights that have far reaching implications for the educational processes. The observation shows that classroom teaching learning is entirely based on the textbooks in all the observed classes, often reduced to reading out the text by the teacher/students, translating and understanding of literal meaning. Except for one case, there were no efforts to go beyond the textbooks. On the contrary even the textbook was not always followed in entirety. Pedagogically laborious activities like surveys or experiments were often glossed over or rushed past or students were asked to do them 'at home'. This point to the need to evolve mechanisms that could encourage and empower teachers to transact the textbook purposefully. There is a lack of systemic view on EVS. EVS is often taken to be equivalent to 'science'. In one of the schools the EVS teacher kept asking her students to take out their science books. One of the teachers, in his interview, specifically mentioned that EVS was essentially science and textbooks needed to reflect this. One of the teachers consistently lamented that the textbook lacked 'content'. These observations are symptomatic of a larger problem. In schools of Delhi Directorate of Education there are two separate books prescribed for SST and EVS which militate against the integrated perspective and conforms to the 'subject' view of knowledge. The inability of the system to develop a coherent view on EVS is problematic.

Across the schools, learner came across as a 'consumer' instead of as constructor of knowledge. Though teachers differed in the way they took the textbook to classroom, there were some patterns that could be identified—students rarely asked questions; there were only a few occasions where students actually said something original or shared a personal insight and when that happened, their responses were almost never built upon in a way that it meaningfully carried forward the chapter; ordinary

classroom material, such as the black board is almost solely used by the teacher; hands-on activities performed during the course of teaching-learning are rare and if performed they are largely teacher centric (even if they include use of ICT-based learning material); there were no occasions created for meaningful school-society interface). The communication of ideas and thoughts is thus largely one way grossly undermining the intellectual capacity of students.

On the face of it teachers appeared to be functioning on the premise that teaching to primary grades was a task that did not merit any special academic preparation. Two teachers cited the length of their teaching experience as reasons as to why there was no need for them for any preparation or for accessing any helpful resources other than the textbooks. A few of the teachers expressed unfamiliarity with the content of the chapters that they had 'not done in class as yet'. This is indicative of a lack of motivation on their part to beforehand engage with and prepare for the content they would to transact in their respective classes. There is a need for the system to take responsibility for providing the teachers with simulating intellectual challenge in their work that constantly spurs them to learn more, widely share and regularly update their knowledge.

The textbook in question carries many finely nuanced understandings that teachers may need to be facilitated with to appreciate. For instance while all teachers identified the picture task (p. 57) as being communicative of the understanding about sources of water, its conservation and difficulties faced by the people, no one realty put the finger on the underlying issue of unequal distribution of resources in our society. However, sensitivities like gender concerns or helping others in times of distress, etc., are easily recognised. Then again while teachers used words like 'interesting' and informative to describe the purpose of narratives, such as that of Ronald Ross, no body mentioned it as being indicative of the dynamics of development of human knowledge in general and of science in particular. Also teachers were largely unaware and unappreciative of children's view and perspective of the natural and asocial world and its implications for teaching-learning. Indeed evolution of such insights requires protracted engagement with an exchange of ideas and opportunities will need to be created for this purpose.

School context also does seem to indirectly influence the transaction of the textbook. For instance, there was less of a tendency to read the textbook line by line and para by para in the school which had ICT availability and access. The Power Point slides

and videos supplemented the textbooks. ICT resources provided a context for discussion and interaction among students. All the teachers observed seemed to have a distinct pattern of textbook usage and curricular transaction in a given context. For instance one of the teachers was more given to reading the textbooks, explaining, sharing personal anecdotes and making frequent references to elements of popular culture, such as films and daily soaps. There was another who liberally peppered her classes with ICT resources and made attempts to go beyond the textbook and provide additional information. All the teachers, across the schools, felt the syllabus was too vast, chapters too many and some too long. This concern needs to carefully considered and appropriately addressed.

R.No. 12912/(66)

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Published by the Head, Publication Department, National Council of Educational Research and Training, Sri Aurobindo Marg, New Delhi 110 016 and printed at Educational Stores, S-5, Bullandshahar Road Industrial Area, Site-I, Ghaziabad (UP).