



Bridging the Gaps between School Curriculum and Teacher Education Programme in India: A Sustainable Approach

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Authors' contributions

This work was carried out in collaboration between both authors. Author AM designed the study, performed the statistical analysis, wrote the protocol and wrote the first draft of the manuscript. Author DD managed the analyses of the study. Both authors read and approved the final manuscript.

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ABSTRACT

This paper analyses some of the existing gaps between the current school curriculum and teacher education programme/s in India. While visualizing and planning for the future smart schools and centre of learning for professional excellence, the authors have suggested some steps to bridge these gaps and bring some innovative changes by adopting a sustainable approach.

Keywords: School curriculum; teacher education; bridging the gaps; sustainable approach.

1. INTRODUCTION

School is a sub-system of the society where the child's thoughts and behaviours are being shaped for bringing a harmonious development at the individual level and making him an

effective and productive citizen at the societal level. If we get competent and effective teachers then the likelihood of attaining these desirable socio-educational outcomes become substantial. Schools may have external material resources in the form of equipment, building, textbooks and

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even community-oriented curriculum content, but if the teachers are ineffective or indifferent to their responsibilities, the whole programme of school education/ teacher education is likely to be ineffective and largely wasted [1].

As we know, teaching effectiveness is the ultimate goal for every school, which depends on good education and competent teachers [2]. Hence, we need to assess the teacher quality, find out their weaknesses, and educate them to improve their performance, motivate them for achieving professional excellence and maintain a high quality teaching practice, which would have a significant impact on students' academic performance.

Keeping in view this "development of human resources" aspect, "National Curriculum Framework" has been made in 2005, which are based on 05 guiding principles –such as:

1. Linking knowledge to real life situations;
2. Discouraging the rote -learning method;
3. Making the curriculum more enriching and activity- based;
4. Introducing flexible as well as continuous and comprehensive evaluation pattern ;
5. Inculcating democratic value oriented attitude and empathetic behaviour amongst the students through classroom learning experiences.

[3] believed that teacher quality is a general term for teacher effectiveness, professional qualification and abilities. Teachers' self-effectiveness is a sense of teachers subjectively evaluating their teaching abilities, with influences on students' learning effects and expecting students' reach to certain education goals [4]. Teachers' effective teaching is defined as teachers making use of their knowledge and abilities at work, being particular about teaching methods, getting familiar with teaching materials, encouraging students, creating a fine learning environment and atmosphere, and helping students to achieve performance excellence in studies [5,6,7].

1.1 Teachers' Perceptions, Attitudes and Behavior

Being a psychological process, effective teaching depends on teacher's ability to motivate students towards learning, maintain a healthy and productive classroom environment and strong interpersonal relationships with students [8,9]. In

this regard, the responsive classroom strategies have been designed by [10] to strengthen the teacher's instructional and interactional practices. Teachers' perceptions, attitudes and priorities are linked closely to their classroom behaviour and practices. Teachers make constant decisions in their classroom, and their beliefs, attitudes and priorities provide a framework for these decisions [11,12]. Moreover, teachers' self - efficacy beliefs (High internal locus of control and positive attitudes towards overcoming difficult situations) have been linked to their classroom behaviour, practices and improved students' academic achievements [13]. Teacher's self-efficacy is positively related to students' attitude towards school, performance as well as their sense of personal efficacy. All these components are mutually supportive in the sense that the teachers also feel more efficacious when their students do well and the vice versa [14,15,16].

For effective and efficient implementation of National Curriculum Framework -2005 (India), the teachers must act as the facilitators of learning and should carry on the following responsibilities – such as,

1. To help the children to make a sense of meaningful life and develop their potentials;
2. To transact the school curriculum based on these guiding principles;
3. To develop the interests, attitudes, competencies, methods, skills, approaches and techniques to put these guiding principles into practice;
4. To link up the schools with the society/community.

Most of the teachers may not have a positive attitude towards teaching because of many reasons i.e., classroom management requires urgent and appropriate responses to students, principals and many other obligatory activities, and better adaptability to cope with the unpredictable environments. These stressors constantly affect the teacher's concentration on long-term goals and reflective practices to improve their performances. In this context, the responsive classroom strategies advocate for specific socio-academic practices, which emphasize on teachers' empathetic attitude and initiative in helping children to develop self-control, enhance the sense of belongingness, social skills, self-learning abilities as well as positive learning environments [17]. Furthermore,

these practices would be reinforced by schools' sustainable disciplinary actions, outcome based approach and community participation.

1.2 Existing Gaps

However, in the present context, with the rapid explosion of knowledge and information, our teacher preparation/ education programme/s seem to be lacking the speed to be able to keep pace with the fast changes in the school curriculum. Thus, the existing teacher education has been inadequate and to some extent irrelevant to the needs of this fast-changing environment of school and society; so, we could see the little linkage between the two. Compared to any other learned profession, i.e., Law, Engineering, Medicine or Management, where the curricula, standards and assessment are far more standardized across the nation, our teacher education curriculum is a bit back-dated.

1. It still struggles to teach the old concept of schooling, theories of learning and teaching practice.
2. The newly appointed school teachers and the prospective teachers still follow the Lecture method and Dictation of notes.
3. The teaching practice programme during the student-teachers' training periods are very limited in terms of time and activities (only for 2/3 weeks) and carry little scope for proficiency development, that too in two method/school subjects.
4. There is over-emphasis on passing the theory exams than the development of practical teaching skill and other competencies.
5. There is no uniformity in B.Ed. curriculum of various universities (NCERT, 1983) [18].
6. The training in the teachers' institute is very mechanical and lacks the relevance to the real needs of teachers and students in the classroom (Gautam, V. 2001) [19].
7. Inefficient Govt. expenditure, inability to attract talent to teaching profession, poor quality teacher training courses, high student dropout rate after Grade 5 and 8 are some of the causes of demoralizing learning outcomes in Govt. (K-12) run schools in India (Education report, 2016) [20].
8. There is huge supply-demand gap between number of students of school going age and number of students actually enrolled in schools (Education report, 2016) [20].

9. Moreover, inefficiency in implementation of 'Right to Education Act', insufficient public spending, poor quality of teaching are the primary reasons of unsustainable school education in India (Education report, 2016) [20].

There may be many causal factors; we can classify some of them – such as –

1. Lack of knowledge of school subjects (latest curriculum) especially in Science subjects and Math.
2. Pedagogical weaknesses –theoretical and practical orientations, guidance, co-curricular activities etc.
3. Lack of coordination between technocratic culture and cultural heritage – i.e., insensitivity towards the problems of the society and little effort to promote learning, religious tolerance, appreciate cultural values, preserve the heritage and enhance the ethical values etc.
4. Lack of action research on school problems, policy framing, and implementation on the basis of feedback received from the field / rural school / urban school etc.; lack of action research to deal with the immediate problems of the school /community.
5. Scarcity of resources in schools and teacher education institutions – infrastructure, competent manpower/teachers/administrators, library etc.
6. Lack of uniformity / standardized structure/framework in the teacher education curriculum throughout the country, violation of NCTE norms and standards in running the teacher education institutions, mushrooming growth of teacher training colleges, for example in W. Bengal and Bihar the political pressure to regularize them and get NCTE affiliation.
7. Lack of teaching aptitude, interest and professionalism amongst the teachers.

2. EMPIRICAL FINDINGS

Therefore, we need to reflect on our pedagogy, the way we teach our children that is mostly parrot-centric [21]. In order to ensure quality education, according to RTE (Right to Education) 'in-service teacher education' and 'professional development' are the biggest challenges in the present context [22]. At the basic level need analyses of both the teachers and students have

to be done thoroughly (EI working paper, issue 13) [23]). According to 'British Council India' report [24]) on Indian school system the findings state -“ Steep dropout rates after elementary and middle schools, increasing enrolment gap from elementary to secondary levels, severe dropout rate among Scheduled caste and tribes, high pupil-teacher ratios, lack of professionally trained teachers, poor level of student learning (scholastic & co-scholastic) resulting in weak learning outcomes at each stage are the major challenges being faced by Indian School Education System”. The teacher education system prepares teachers who do not necessarily become professionally competent and committed at the completion of such course. A large number of teacher training institutes do not practice what they preach; many acquired skills and methodologies learned are hardly being practiced in the schools. Additionally, there is prominent quality gap between Govt. and Private schools; poor qualities of education in Govt. schools are driving away students from Govt. schools to Private schools. As a result enrollment in Private schools has been rising by 31% in 2014 (Annual Status Education Report, 2014) [24].

From literature review, we could find that teacher's professional growth, institutional guidelines, job involvement and in-service training programme/s, among many others, are the significant contributing factors in teaching effectiveness. [5] found that the teacher-student interaction, teacher quality and teaching effectiveness differ significantly with the variations in school category/ type and locations. This study explores the relationships between teacher quality and teaching effectiveness as perceived by students; the correlation being positive and significant ($r= 0.87$, $p< 0.01$), confirms these two to be highly correlated. Furthermore, for regression analysis, the teacher quality (as perceived by the students) has been used as a predictor variable, and teaching effectiveness (as per students' perception) has been used as a criterion variable to explore the predicting power of teacher components. Professional competence has the largest β value ($\beta = 0.69$). Thus, it is suggested here that teachers' performance evaluation and competence improvement can be done through certain parameters like high-grade students' teacher ratings or teaching effectiveness of vocational high school teachers (as criterion reference).

Therefore, the school reforms, teacher education curriculum should be properly aligned to yield 21st century's desirable learning outcomes.

2.1 Teacher Education, Reflective Practice and Professional Development

According to [25] there are at least four essential characteristics of a professionally trained teacher.

1. The teacher must have a thorough understanding of not only his own subject but also a sound knowledge of interdisciplinary areas.
2. The teacher needs to have the knowledge of developmental psychology in order to understand the individual differences among children, their growth and maturation processes, habit formation and laws of learning etc. which would enhance his/her professional competence, adaptability and motivation.
3. He should be well conversant with scientific pedagogy and innovative practices in teaching.
4. He should have a good deal of knowledge in school organization, planning and management.

Reflective practice and professional development are deeply inter-related. If reflective practice would be incorporated in our teaching behaviour, then we can develop an in-depth understanding of teaching-learning competencies and professional knowledge. While viewing the reflective action as an inseparable part of problem-solving behaviour, [26] had suggested a five-step model of problem solving that included suggesting solutions, posing questions, hypothesizing, reasoning and testing, which together form a sequential process for reflective thinking. Later on, other researchers have extended this work by adding new dimensions like worthiness of actions and transforming education to reflective practice. Subsequently, [27] viewed reflective teaching as the ways and means of technical competence; [28] described this as critical thinking applied in pedagogy, thus would encompass all the practical and critical issues of the school environment (both within and outside.) Similarly, [29,30] pointed out that professional knowledge and competence actually lie in practice. Many experienced teacher could not always articulate their tacit knowledge but could express their past experience and latent

knowledge through action. He proposed 02 sorts of reflection: reflection-in-action and reflection-on-action. In this context, reflection-in-action is a spontaneous reflection of an experienced teacher while in action/trying to solve a problem. On the other hand, reflection-on-action is about the retrospection of teaching session/demonstration with a deliberate attempt to improve the teaching practice. This involves more critical analysis and evaluation of past actions.

Likewise, in Experiential learning [31] emphasizes that most of the informal learning take place outside the formal education setting, thus enables the learner to organize and evaluate his learning experiences. Thus, the pedagogy of constructivism advocates that professional teacher education courses should be designed, keeping in mind that- i) Knowledge is being created by every learner rather than passively received; ii) Practice and the actual discourse achieve this; iii) It gets further explored and transformed through critical reflecting rather than just remembering some contents [32]. The main ideas of constructivism are:

- a) Learners actively construct and reconstruct their knowledge rather than just passively receive from external sources.
- b) Children have their own preferred learning styles for which we must have different ability groupings and specific pedagogy for different subjects.
- c) Caring nurturance and healthy interpersonal relationships are important factors of children's socio-emotional and educational development.
- d) Collaboration is also an essential component of creating an inclusive and cooperative climate in the school.
- e) There are some critical periods of learning particular skills in the child's growth and development process. The child can independently do certain things on his own, which could further be improved through tutor's assistance and training (zone of proximal development) [33].

Various research findings have also suggested that ICT can be used as an instructional tool for facilitating constructive learning environment; it can assist both the teacher and learner in uncovering, assimilating and organizing the prior knowledge with the existing contextual problem based learning to unleash and exploit the creative talents [34,35,36]. Moreover, research

review of 150 international studies has revealed that the teachers can be assisted to improve their teaching practices through various academic and constructive interventions [37].

For example:

1. Short training programme/s can be used to disseminate information about institutional policies, practices, and to impart different skills, competencies and techniques.
2. Institutional training can be effective in improving knowledge, attitudes and teaching skills.
3. Peer assessment, students' feedback, and consultation with senior colleagues can further enhance the quality of teaching.
4. Now-a- days students' assessment of teaching in a more qualitative form is the most reliable/authentic indicator of effective teaching.
5. Intensive and comprehensive staff developments, as well as continuing teacher education programme/s, are the most effective methods of transforming the academicians' attitudes, beliefs, practices, and values of the teaching profession.

In some elite private schools in India ICT has been extensively used for teaching, administration, and allied activities, i.e., Educomp, Mindspark, CORE, Edmastery, Fedena etc. are very often used for educational outreach programme/s (Implementations in Private Schools-India, MHRD, Govt. of India) [38].

Therefore, all the academic institutions should invest resources for the continuous professional development of their teachers and academic staff. The International studies have demonstrated that teachers' professional development does make a positive difference in quality teaching.

2.2 Ground Reality: A Field Report

Today's students need to know not only the basic reading and arithmetic skills but other skills like creative thinking, critical thinking, making analyses and inferences as well. From the literature the researchers have also found a gap in Government funded and Private schools, and increasing enrollment in private/public schools; this has prompted them to make a comparison. However, this result could not be generalized because of purposive sample and limited population.

For getting some first-hand information regarding the present reality of school and teacher education institutions, their effectiveness etc. the researchers have collected some field data from two secondary schools (01 Govt. & 01 Private) and two teacher education colleges (01 Govt. & 01 Self-financed) in West Midnapore district of West Bengal in India. All the four institutions were given to fill up a 'Self-appraisal report' (NCTE-National Council of Teacher Education prescribed) to give their details during 2014-2016 academic calendar. The report format was quite detail, elaborating all the aspects of academic, managerial and extension activities. When the qualitative data were analyzed no significant difference was found between Govt. and Private institutions. The summary of report showed that the teacher education colleges are affiliated to the 'Vidyasagar University' a state university, and schools are affiliated to 'West Bengal School Certification' board; both the private and self-financed institutions are being partially funded by "Vivekananda Education Trust" and managed by course fees collected from the students during annual/semester admissions. Both type of institutions generally follow the "National Council of Teacher Education" (NCTE) norms, i.e., appointed qualified /eligible teachers, designed the curricula/courses, pedagogy, evaluation pattern etc.; all the four institutions (02 schools & 02 colleges) are having almost equal basic facilities i.e., health, sports, canteen, library, science laboratory, computer lab etc. They carry on the academic programme/s as per their annual academic calendar, but no such extra academic networking nor collaboration with other institutions exist; some extension services like NSS camps, SUPW, plantations, Swachhata Aviyan /cleanliness programme are going on; students' selections are being done through academic record and personal interview/counseling. Even though, the authorities claim that they do take care of the needs of their students, no such effective remedial classes/teachings are available. The performance monitoring and feedback mechanisms are also not active/effective; pedagogy is primarily didactic (lecture method) with some lab components, assignments and micro-teaching classes. The teachers attend the mandatory refresher courses organized by NCTE or State Govt. board; few teachers deliver the lectures as resource persons in other institutions; minimum professional workshops, summer training camps are organized by these educational institutions (school/colleges). However, through some co-curricular and

community-oriented projects/assignments the teachers try to develop some generic skills among students i.e., communication, collaboration, learning how to learn, how to teach, use of computer for learning, civic responsibilities etc. Both the teachers and students join together for extension services and often organize NCC programme/s, medical camp, health and hygiene awareness camp, adult literacy camp, AIDs awareness camp etc. The facilities of library, book bank and educational technology are minimally used, but no research nor pedagogic innovations/initiatives are prevalent; students are primarily engaged in curricular, sports, community services and cultural activities.

The researchers also tried to compare the academic performance of Govt. and Private schools' children. As the Fig. 1 shows (given below) the students' enrollment in class VIII for appearing the final examination (2014) is higher but the students' performance is better in Private school (in upper category of 80% excellent & 60% 1st division category) than the Govt. school. The same trend is observed in Class IX and X as well; students' performance in Private school (Vivekananda Mission high school) is better and uniform compared to their total strength; a small percentage of children fall in the 2nd division/average category and failure is almost zero (see Figs. 2 & 3). But in Government school maximum students fall in the 2nd division/average and few in the above average /1st division category (Class IX, Fig. 2). Hence, it could be assumed that the instruction, pedagogy and academic activities are better in Private school compared to Govt. school. Although we cannot generalize this finding, by the reputation of Vivekananda missionaries' schools these assumptions appear to be true.

3. DISCUSSION

Therefore, we need to focus on transforming our education system (from KG to PG) in order to ensure quality education to all, linking education/curriculum to global job market, social reconstruction, and justice. At the same time we have to enrich the cultural heritage, geographical and economic environment through our constitutional rules [39] has advocated for Common School System based on Neighborhood Schools (CSS- NS) recommending for a heterogeneous classroom representing the diversity (socio-cultural, economic, educational, biological, & ethnic etc.)

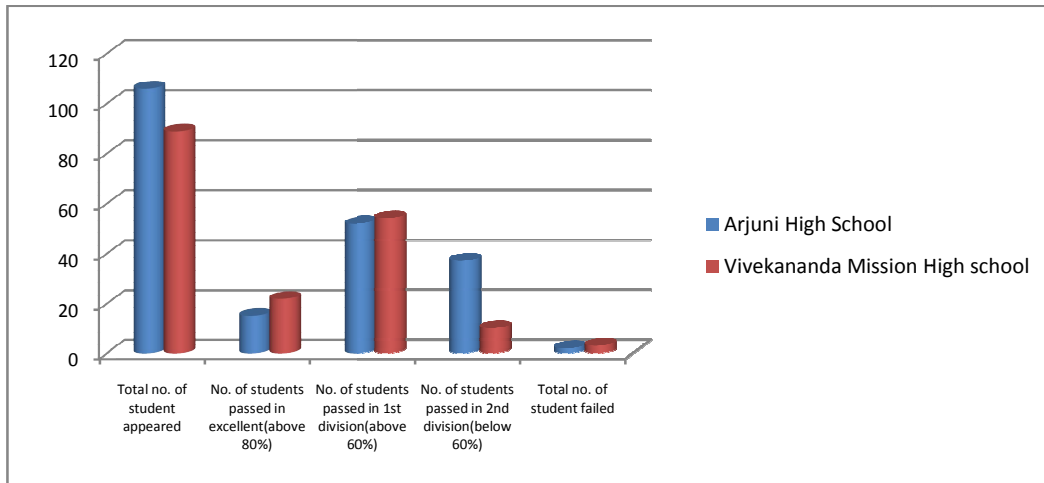


Fig. 1. Comparison between Govt. and Private schools', Class VIII-Children's final exam performance in 2014

Arjuni Govt. High school, B) Vivekananda Mission/ Private High School

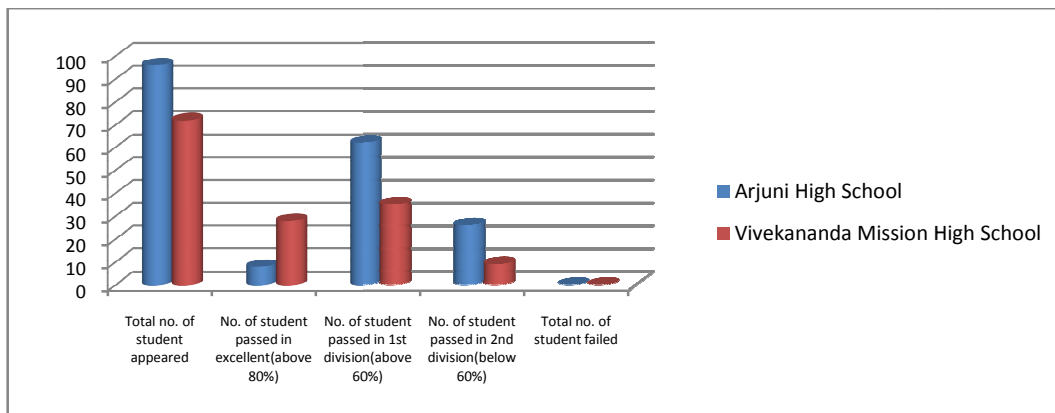


Fig. 2. Comparison between Govt. and Private schools' Class IX students' final exam performance in 2014

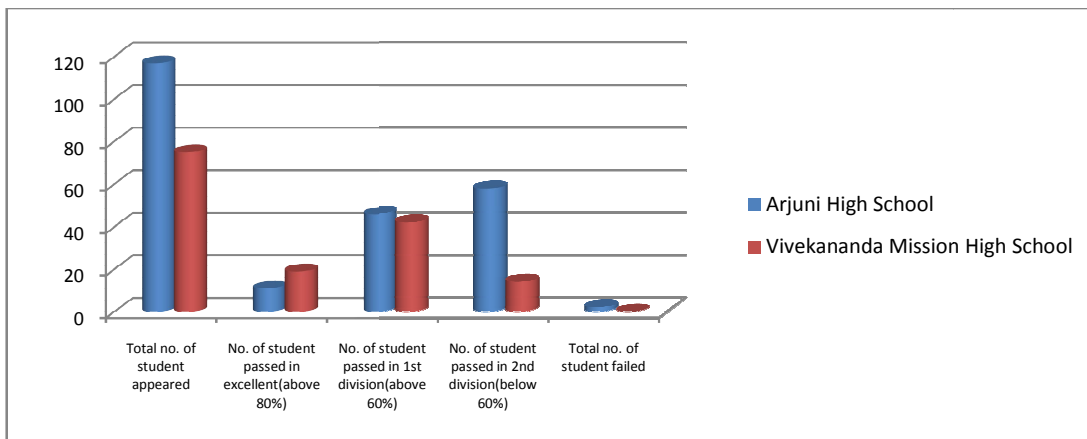


Fig. 3. Final exam. performance of class X students in Govt. and private schools in 2014

Arjuni Govt. High school, B) Vivekananda Mission/ Private High School

that prevails in the neighborhood. We must have a common school system, where the children of diverse background, ethnicity and socio-economic status can share the same public space, be socialized together and learn cooperatively. Rather it should be a precondition for nurturing a sense of common citizenship and social responsibility. Thus, CSS – NS can be a powerful platform for promoting solidarity and secular stand cutting across cast, religious and language divides, for undertaking democratic struggles for social transformation. Thus, if we seriously work on these (above-mentioned) innovative changes we can prepare more effective and competent teachers, improve the quality of teaching and school education, as well as minimize the gaps between school education and teacher education. Likewise, we can bring them forward to go hand in hand and fulfill the current needs of the country/ society. We can build up smart schools and centre of learning for professional excellence, only when we can bridge the gaps of our school curriculum and teacher education programme/s through a constructive approach. In addition to this, we can focus on leadership and governance practices; emphasis on digital infrastructure and resources; acknowledgment of teachers' role and the need for capacity building; the need for integration of digital technologies across the curriculum; and the need for cross-fertilization and peer-learning for the development and implementation of self-assessment tools (SAT) etc. These innovations would guide the policy makers and educational practitioners to design a prototype SAT for digitally-competent schools that can empower public authorities, and enable school communities (i.e., school leaders, teachers and students) to periodically reflect upon their school's current state of development and on future steps in realizing effective digital-age learning [6].

4. SUGGESTIONS FOR MINIMIZING THE GAPS

1. Continuous revision of the curriculum: An urgent need for revising the teacher education curriculum in the line of changes in the school education curriculum. A frontline approach/management strategy which provides solutions to accommodate inputs of future needs and demands in the present curriculum without hectic formal procedures can be adopted by the administration of teacher education institutes.
2. Need for localized globalization: There is need to think locally and act globally. Teacher education has to be localized globally, oriented to serve the local state, national and global needs. It has to be initiated at all stages of input process and output of teacher education programme.
3. Contextualizing Education: Orienting our prospective teachers with the existing needs of our society / immediate community by adopting multi-grade teaching, integral education, teaching through locally made teaching aids, non-formal / open school, child-centered, activity based and culturally responsive curriculum etc.
4. Teaching for construction of knowledge rather than gathering information through:
5. Brainstorming, creative problem solving, critical analysis, learning through interaction and participation.
6. A constructive approach to teaching and learning: Construction of different types of knowledge and its applications rather than rote memorization of factual information, and to re-invent and explore knowledge at higher order thinking level.
7. Testing the teaching aptitude, interest, and ability of prospective teachers at the entry level through admission test, to prevent mediocrity and inadequate professionalism in teaching; orienting young/ junior teachers regarding professional ethics, values, norms and standards of school education as well.
8. Increasing the course-duration of teacher preparation programme at the secondary level up to at least 02 years. Along with the NCTE's (2008) four semester teachers' job training, internship and action research experiences are very much vital [19].
9. Improving practice teaching and cognitive lesson planning: Need for pragmatic and need-based practice – teaching. There is a need to make the future teachers more autonomous and creative/ innovative; spontaneous lesson planning which can allow the teachers to work on the spot thinking and finding a way out to manage and tackle the dynamic classes. In cognitive lesson planning the teacher has to prepare a sketch lesson plan on the paper and should put it on the cognition level i.e., a diagrammatic plan of the lesson to enhance the thinking ability of the teacher to be autonomous and able to tackle the diversified class room situations

to develop a cognitive map of the lesson to be delivered with wide variety and flexibility.

10. Pragmatism in curriculum: Discovery and constructive learning, flexible and innovative pedagogy, dynamic interaction, reflective thinking, monitoring, evaluation and feedback mechanism to improve quality and to decrease the gap between school curriculum and teacher education curriculum.
11. Designing the learning experiences that empower the learner.
12. Innovative changes in the process of evaluation both at school and teacher education level, giving equal weight-age to affective domain and harmonious personality development.
13. Creating media culture -educational technology/ ICT to act as instrument of bridging this gap and teachers to act as “transformative intellectuals”/ “change agents” to make their students sensitive to and knowledgeable about the moral contours of life, to adopt an universal, global and non-religious ethics and code of conduct/behavior for the welfare of human race.
14. With reference to the Right to Education Act (Govt. of India) [39] has advocated for Common School System based on Neighborhood Schools (CSS- NS) which should be developed in consonance with the basic spirit and principles enshrined in our constitution.

5. CONCLUSION

More recently, researchers at the global level also advocates that universities should need to think proactively regarding how they can build a sustainable high-quality partnership with schools irrespective of their traditional role in higher education [40]. Similarly, [41] stated that globally teacher education is challenged to change relationships with schools and teachers, and become more collaborative in teaching and research. Thus, the quality of teaching and learning in schools can be improved significantly when bridges are built between theory and practice, among practitioners, trainers and academic researchers. Therefore, school-university partnerships play a key role in boosting teachers' professional knowledge and updating the teaching practices according to the changing needs of students [42]. Researchers [43,44] recommend for school districts to work in

partnership with colleges and universities to accredit the teacher preparation programme/s and maximize its impact on the performance of teachers at the beginning of their careers; this policy could motivate the 21st century students to be the lifelong learners. In practice the ‘Institute of Education’ of University of Wales [45] has started professional learning partnership involving more than 100 schools across Wales. Probably in India also we need such kind of integrated school-cum -higher/teacher education system for achieving sustainable education goals. The present practice of ‘rote memorization’ and ‘grading evaluation pattern’ should be replaced with ‘teaching for understanding, critical thinking, and creative thinking’ with an ICT based deep learning approach for making both the school education and teacher education innovative-cum-sustainable to meet the emerging needs of our society.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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