

Pre-Service and In-Service Teacher Training

Strategy Document focusing on Published Teacher Training Curricula

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Summary

This document is prepared as part of a technical cooperation exercise by the Institute of Education (IOE), University of London, for the project, International Best Practices Exchange leading to Innovation in Sarva Shiksha Abhiyan (SSA). The purpose of this document is to identify issues relating to pre- and in-service teacher training in India; and it complements the Institute of Education's earlier report on teacher training: *A Pre-Service Teacher Education and Professional Development Programme*. We recognise that there are real challenges facing teacher education in India and that re-writing and re-working teacher training curricula is only one step in this difficult reform process. We examined syllabuses from institutions within the pilot states, which included Delhi, Gujarat, Rajasthan, Himachal Pradesh, and Jammu and Kashmir. Syllabuses from Andhra Pradesh and Orissa were not included due to a lack of availability. Programmes referred to in this review are the Bachelor of Education (B.Ed) and the Master of Education (M.Ed).

The review offers a series of comments about: content elements; relations between knowledge, skills and dispositions; formative and summative assessment; learning; theory-to-practice and practice-to-theory-to-practice relations; capacity development and delivery through blended learning approaches. For example, the syllabuses we examined could have been further enhanced by more attention being given to learning processes and certainly none of them argued for a fit between learning outcomes or curriculum standards and learning approaches, a curriculum principle we consider to be important. In the syllabuses there was some confusion about the distinction between formative and summative forms of assessment, or at least, the syllabuses did not specify how the two work in different ways, and how each is important in any pre-service or in-service curriculum. Choosing the right people to be teachers and accrediting or licensing those who subsequently become teachers are important issues. However, any curriculum (either at pre-service or in-service levels) needs to focus on learning, and in this case learning how to be a teacher (pre-service) and learning how to sustain oneself as a teacher during a career and improve oneself (in-service). Some of the syllabuses gave prominence to forms of assessment (i.e. examinations) which are not suitable for assessing many of the knowledge constructs, skills and dispositions associated with teacher training (both pre-service and in-service). We also suggest that theory-to-practice relations (generally pre-service) and practice-to-theory-to-practice relations (more likely to be relevant at in-service levels) in the various programmes need to be given more thought and attention. Throughout we point to pre-service and in-service teacher training practices which we feel need greater definition and therefore should be central to reform processes in India.

Introduction

We recognise that there are real challenges facing teacher education in India and that re-writing and re-working teacher training curricula is only one step in a difficult reform process. For example, we refer at the end of this document to another challenge facing teacher training, that of up-skilling or capacity-building and this clearly requires more than a rewriting or re-working of the curriculum document to which the teacher trainer works. Any teacher-trainer will always find it difficult to meet all the pressures that are placed on them in the delivery of a programme, and further to this, a curriculum is a framework and this requires complex choices to be made by the teacher trainer during delivery. There is much to praise in the coherence of the vision displayed in the curricula we examined, as there is in the *National Curriculum Framework for Teaching Education* (National Council for Teacher Education, New Delhi, 2009/2010) and other important government documents. However, we concentrated in this document on missing elements and areas of improvement in the published curriculum frameworks; whilst at the same time being fully aware of many of the strengths of current programmes. We collected together a number of pre-service and in-service teacher training syllabuses from the seven pilot states.

Before we discuss these syllabuses, it is important to qualify our analysis in a number of ways:

- A syllabus cannot reflect what is taught and how it is taught on a programme of study in any precise sense. Changes and amendments to the syllabus and to what was originally intended by those who write these syllabuses are inevitable as teacher trainers (at both pre-service and in-service levels) adapt the available material to suit their purposes and to fit their current capacities as they deliver these programmes. Secondly, missing elements and weaknesses in the syllabuses require teachers to fill these gaps and correct these weaknesses, in the context of their own teaching practice and in terms of any implementation constraints they encounter.
- The programmes we chose to examine were only a sample from all the training outputs in the seven pilot states. Programmes from Orissa and Andhra Pradesh, however, are not included due to the fact that syllabuses from universities offering relevant programmes were not readily available. Furthermore, we did not access in-service training programme syllabuses in the pilot states as these were not always available in publishable form. The programme sites were as follows: Delhi: Delhi University, Guru Gobind Singh Indraprastha University (University School of Education); Gujarat: Sandar Patel University, Faculty of Education; Gujarat University (This programme is run in the University Department and thirteen other Colleges of Education (PG) affiliated to the Gujarat University and recognized by NCTE.); Rajasthan: Institute of Advanced Studies in Education Deemed University; Himachal Pradesh: Himachal Pradesh University, Department of Education (also, the Government College of Teacher Education, Dharamsala); and Jammu and Kashmir: Mier College of Education, affiliated to the University of Jammu.
- This meant that we analysed B.Ed programmes in: Delhi University; Sandar Patel Univ, Faculty of Education; Gujarat University; Institute of Advanced Studies in Education Deemed University; Himachal Pradesh University, Department of Education (also used in Govt. College of Teacher Education Dharamsala); and Mier College of Education, Affiliated to the University of Jammu. We also analysed M.Ed. programmes in:

University School of Education, Guru Gobind Singh Indraprastha University; Gujarat University (The course is run in the University Department and in the other thirteen Colleges of Education (PG) affiliated to the Gujarat University and recognized by NCTE.); and the Institute of Advanced Studies in Education Deemed University in Rajasthan.

- There are intrinsic limitations in any teacher training syllabus for the very good reason that such syllabuses are frameworks and nothing more; some discretion should therefore be given to the teacher trainer as they interpret these syllabuses in their classrooms and in their students' schools.

Areas for Further Development

1. Content Elements

In the syllabuses we found to different degrees omissions of important content elements. Content elements need to include (see Figure 1):

Figure 1: Pre-Service Teacher Education Modules

1. Subject Knowledge
2. Educational Foundations
3. Educational Infrastructure
4. Dispositional Learning
5. Classroom Management
6. Pedagogy and Learning Approaches
7. Planning Classroom Activities
8. Classroom Task Management
9. Reading and Creating Educational Texts
10. Professional Development Processes

These are headline accounts of content. Missing elements were noted in the syllabuses at a more detailed level. However, these were not apparent, and to the same degree, in all the syllabuses we examined. An example of a more detailed breakdown of the contents of one pre-service module is provided in Appendix 1. We further suggest that teacher trainer programme syllabuses should distinguish between: learning outcomes; content knowledge; teaching and learning approaches; and logistics of use, i.e. when and where they should be used, and make appropriate connections between them.

2. Conflating Knowledge, Skills and Dispositions (See Appendix 2)

A second concern in many of the syllabuses is the tendency to conflate knowledge, skills and dispositions, and to omit references to teaching and learning approaches which are appropriate for these three different elements. We therefore suggest that there is a need to specify that a knowledge element should be taught and learnt in a different way from a skill,

and it also follows that dispositional learning is very different from the learning of a skill or piece of knowledge. If this is not taken into account, the teacher-trainer is unlikely to teach the knowledge set, skill or disposition in the most effective way. For example, the student teacher cannot be told how they should operate effectively in the classroom; they need to be able to perform, however inadequately, in the classroom and learn by reflecting on mistakes they have made, and subsequently make improvements to their performance. Another example relates to the learning outcome: ‘Develop knowledge of self, and the capacity to project the self in a variety of educational settings, present and future’. The student-teacher will learn very little about these two curriculum standards if they are told by a teacher-trainer that *this* or *that* is what they should think about themselves and *this* is how they should project themselves in the classroom, because dispositional learning doesn’t work in this way.

3. Separating Formative and Summative Purposes of Assessment

We found in the published syllabuses a lack of attention being paid to the distinction between summative and formative assessment. Learning outcomes need to be distinguished from assessment standards. It is therefore important that the outcome is not compromised in any way by whether it can or cannot be used as a testable construct. An assessment standard specifies those knowledge-sets, skills or dispositions which a student is required to have, and which are expressed in such a way that they can be tested in a controlled environment, such as an examination. The principal problem with assessment standards is that testing a person’s knowledge, skills and dispositions is likely to have washback effects on the original knowledge, skill or dispositional set. Instead of the assessment acting merely as a descriptive device, it also acts in a variety of ways to transform the curriculum it is seeking to measure. A student teacher may have to reframe their knowledge, skill or dispositional set to fit the test, and therefore the assessment of their mastery of this knowledge, skill or dispositional set is not a determination of their competence, but a determination of whether they have successfully understood how to rework their capacity to fit the demands of the examination technology. As a result teaching to the test occurs and the curriculum is narrowed to accommodate those learning outcomes which can more easily be assessed.

Learning and assessment practices on a teacher-training programme can be regarded as formative if: there is evidence of the student's achievement; that evidence is *elicited*, *interpreted*, and *used* by the teacher-trainer, the individual student and their fellow students, and such evidence is used by the teacher-trainer with the specific intention of deciding on the subsequent steps in the teaching-and-learning process (i.e. 'instruction' with the intention of further developing learning). The interaction between the teacher-trainer and their student(s) is formative when it influences the learner's cognition; the teacher-trainer’s external stimulus and feedback triggers an internal production by the individual student.

In examining pre-service training programmes, we identified a number of concerns with regards to assessment:

- The syllabuses confused formative and summative forms of assessment or at least did not specify in the published document how the two work in different ways, and how each is important in any pre-service or in-service curriculum.
- By confusing the two or ignoring the issue they downgrade learning. Choosing the right people to be teachers and accrediting or licensing those who subsequently become

teachers are important issues. However, any curriculum (either at pre-service or in-service levels) needs to focus on learning, and in this case learning how to be a teacher (pre-service) and learning how to sustain themselves as a teacher during a career and improve themselves (in-service).

- Some of the syllabuses gave prominence to forms of assessment (i.e. examinations) which are not suitable for assessing many of the knowledge constructs, skills and dispositions associated with teacher training (both pre-service and in-service).

4. Learning

The syllabuses we examined did not pay enough attention to learning processes and certainly none of them argued for a fit between learning outcomes or curriculum standards *and* learning approaches. What this means is that inappropriate teaching and learning approaches are used, with the consequence that training programmes (both pre-service and in-service) become poor vehicles for delivering learning outcomes. There is a need when specifying a teaching and learning approach, and this applies to teacher training as much as it does to school learning, to: i) specify the circumstances in which it can be used in the specific learning environment; ii) specify the resources and technologies needed to allow that learning to take place; iii) specify the type of relationship between teacher and student, and student and student, to effect that learning; iv) specify a theory of learning – how can that construct (i.e. knowledge set, skill or disposition/inclination) be assimilated; and v) develop a theory of transfer held by the teacher – that is, how can the learning which has taken place in a particular set of circumstances (i.e. a classroom in a teacher training institute, with a set of student-teachers, in a particular way, with a particular theory of learning underpinning it, and so forth) transfer to other environments in other places and times (including school classrooms). By doing this, teacher-trainers avoid the problems associated with didactic, unproductive and sterile forms of teaching.

Here is a range of teaching and learning mechanisms or action sets:

Figure 2: Forms of Learning

1. Observation
2. Coaching
3. Goal-Orientated Learning and Anticipation
4. Mentoring
5. Peer Learning
6. Simulation
7. Instruction
8. Concept Formation
9. Reflection
10. Meta-Cognition
11. Problem-Solving
12. Practice

5. Theory-to-Practice and Practice-to-Theory-to-Practice Relations

This issue was addressed in all the syllabuses we examined, though perhaps not explicitly in every case. It has been suggested that there is an over-emphasis on educational theory and a lack of relevance of much of this theory to the practice of teaching. Theory-to-practice activities are generally more prominent at pre-service levels and practice-to-theory-to-practice activities are more prominent at in-service levels. There is a need therefore in pre-service and in-service syllabuses for the relations to be made more explicit. For example, at in-service level, practice-to-theory-to-practice relations can be addressed by institutionalising processes of action research and teacher learning communities. Here are some practical steps which lead to the implementation of these action research approaches and the setting up of teacher learning communities:

- Teachers familiarize themselves with the new ideas, their objectives, rationale, contents and procedures and experiment with these elements in their actual classrooms. They engage in processes of developing their professional practice and at the same time adapt, refine and contribute to the development of the curriculum which they are implementing.
- Teachers reflect on their past and current teaching practice.
- They reflect upon their professional practices, routine activities and values in their institutional, socio-cultural, economic and political context, i.e. from different angles and perspectives.
- Practitioners share teaching material and exchange views of and experiences with particular pedagogic strategies with peers.
- They look beyond their own classroom through peer coaching, team teaching and classroom observation. Again, they can learn from others and contribute to the learning of their peers.
- Teachers are introduced to and employ methods of analyzing classroom interaction and communication in relation to different contexts and constraints.
- They may seek feedback from their students who are a great but often underrated source of teacher development, for example, through individual and group journals and discussions. They also monitor students' development and learning.
- Practitioners connect with the existing knowledge base and research either through professional or academic publications that relate to specific relevant issues, such as for example, classroom management or student motivation. These readings could be shared as a stimulus for professional dialogue among peers.
- Teachers engage in collaborative inquiry and this contributes to improvements to their classroom practice. This is what we mean by action research processes.
- The professional isolation of teachers limits access to new ideas and better solutions to classroom problems, drives stress inwards to fester and accumulate, fails to recognize and praise success, and permits incompetence to exist and persist to the detriment of students, colleagues and the teachers. Isolation allows, even if it does not always produce, conservatism and resistance to innovation in teaching.
- Professional learning is both a process internal to the individual and social, as it requires the participation in socially organized practices in particular communities. Effective professional development should therefore not only encourage reflection and lifelong learning on an individual level but also collaboration through Teacher Learning Communities.

- Such communities share and critically interrogate their practices in a collaborative, inclusive and growth promoting fashion and ultimately pursue the common goal of improving their effectiveness for the benefit of their students.
- Teacher Learning Communities are a non-threatening venue allowing teachers to notice weaknesses in their content and pedagogic knowledge and get help with these weaknesses.
- Teacher Learning Communities are embedded in the day-to-day realities of teachers' classrooms and schools, and thus provide a time and place where teachers can hear real-life stories from colleagues that show the benefits of adopting these techniques in situations similar to their own. Without that kind of local reassurance, there is little chance teachers will risk upsetting the prevailing classroom contract.
- As teachers adjust their practice, they are risking both disorder and less-than-accomplished performance on the part of their students and themselves. Being a member of a community of teacher-learners engaged together in a change process provides the support teachers need to take such risks. In short, Teacher Learning Communities provide a forum for supporting teachers in converting the curricular reform into 'lived' practices within their classrooms.
- Collaborative enquiry and learning has great transformative potential as it involves larger sections of the teaching force and enhances their capacity to deal with change.
- School-embedded Teacher Learning Communities are sustained over time, allowing change to occur developmentally.
- The collaborative enquiry is an inclusive activity and thus contributes to the generation and maintenance of a learning organisation.
- Collaborative enquiry creates professional knowledge that is potentially relevant to larger populations of teachers and can hence be fruitfully transferred to other schools.

6. Detailed Examination of the Syllabuses

B.Ed Programmes:

- We found many examples of structured arrangements relating to professional learning (research, participation in the community, an understanding of standards, ethical concerns and dilemmas, plans of action, and career development). Coverage of the philosophy, psychology, sociology and history of education seems to be common to these syllabuses. However, these subjects are taught independently and the linkages between them do not seem to be addressed.
- There were some examples of teaching professional dispositions but these were not consistently observed in the programmes we looked at. When dispositional learning is addressed, it is not clear how it is actually achieved in practice and how it is assessed.
- The development of lifelong learning by using available resources and networks was addressed through training in working with the community, either through internship or some subject courses. Sometimes the importance of lifelong learning was mentioned as part of the vision of the institution offering the course (e.g. Delhi University) but then subsequently this was not clearly reflected in the training. Planning for lifelong learning was not observed.
- The most common set of compulsory courses are *Education in Emerging Indian Society*, *Philosophy and Psychology in Education* (normally including both Indian traditional thinkers and Western thinkers), *School Management* (sometimes in electives), *Computer*

Education, Environmental Education, and Internship. The availability of courses on teaching techniques is not consistent. Research focused subjects are often not compulsory but research is often included in a psychology course.

- The number and type of optional courses varies among the programmes as well as their credit load. In general, courses with subject-focuses are available. In addition, special education, guidance and counselling, research, and value based education, such as peace and human rights, courses are offered.
- In general, courses seem to be taught almost independently from one another without clear linkages between them. Course contents reflect the contents to be covered rather than making links between contents and teaching approaches.
- The ratio of theoretical to practical courses varies depending on how different elements of the curriculum are categorised, i.e. 'theory' versus 'practicum'. Although some programmes have up to 50% 'practicum' learning, the school experience generally reflects about 25% of the overall requirement. The duration of internships is only about two weeks and they are often organised toward the end of the overall training programme. This may not give students the chance to reflect on their teaching experience, to strengthen theory-practice links. Many programmes address knowledge or understanding of certain concepts and ideas as well as skills, but they often ignore dispositions, and it is not clear how dispositional learning is assessed as part of the learning process.
- Given the importance of diversity, the focus on learning about and managing diversity in classroom is limited. It is occasionally covered in special education (optional) or psychology courses.
- Because of the way courses are categorised into 'theory' and 'practicum', it is often not clear which courses are conducted inside or outside the teacher training schools. While the opportunities for actual teaching in school are limited, many teaching practices take place inside the teacher training schools. For school internship, there is a dearth of tutors and supervisors to mentor student teachers, which helps to link the training site to the internship site.
- Important learning approaches, such as meta-learning, are neglected.
- Most of the courses do not emphasise group work/assessment.
- Some courses seem to take into account the assessment of learning processes but it is not clear how this is reflected in assessment tools or testing approaches. School internship involves keeping records of the student's experience but it is not clear how this is used to assess learning processes. A focus on learning processes needs to be reflected in the learning outcomes, teaching approaches, and assessment tools. Internal assessment needs to focus more on learning and less on external assessment for knowledge based testing.
- Programmes often provide courses on school administration and management but none of the programmes offer administrator pathways.
- The syllabuses of some of the major institutions used in other colleges and universities, not only in 'affiliated colleges' many on-line syllabuses do not provide much information about course details qualifications of teacher trainers are unknown. Subject trainers are possibly from other departments and not experts in training teachers.

M.Ed Programmes:

- We found many examples of structured arrangements related to professional learning (research, participation in the community, an understanding of standards, ethical concerns and dilemmas, plans of action, and career development). Coverage of the philosophy, psychology, sociology and history of education seems to be common to these syllabuses.

However, these subjects are taught independently and the linkages between them do not seem to be addressed.

- Besides Gujarat University, the specific objectives of the M.Ed courses were not clearly defined. In terms of the knowledge and skills stated in the objectives and curriculum, it is not clear how the M.Ed programmes are different from the B.Ed programmes.
- Teacher values and critical thinking were often addressed but strategic thinking is rarely reflected in course objectives, contents, teaching approaches as well as assessment strategies. Learning of 'strategy' is mentioned but not 'strategic thinking'.
- The syllabus from Gujarat University mentions professional development as part of a programme; however, this is not clearly reflected in its learning outcomes and teaching approaches.
- The compulsory content focuses to a greater extent on research in comparison with B.Ed programmes. The work experience of IASE includes coordinating a programme for teachers.
- These Masters programmes focus on both theory and practice, and this can be seen in the course objectives as well as the curriculum structures. There is not a consistent approach in the syllabuses we examined to teaching, learning outcomes and assessment methods.
- The value focused courses in Gujarat University are unique in the way that they encourage learners to reflect on the knowledge as it becomes part of the curriculum. In general, however, it is difficult to identify approaches in teaching and assessment that connect theory and practice and identify processes of learning.
- Inclusive content is most apparent in Gujarat University, with a focus on career guidance and sociological foundations. This university however does not offer a separate 'special education' course.
- The contents and objectives of internship, though not clearly stated, seem to focus on actual experience in schools rather than identifying and learning about the links between what is learned in the university and the school-based experience, to allow both aspects to complement each other.
- Courses sometimes focus on group work as a concept and as a teaching approach but they do not practice it in their own teaching and do not include it in the assessments that are made. Course tutors sometimes focus on continuous assessment or sessional work aimed at assessing the learning process. However, it is not clear that a distinction is maintained between formative and summative processes of assessment, and thus learning opportunities, we suspect, are sometimes lost.
- The M.Ed programmes are generally one year full-time courses.
- The programme objectives at Gujarat University identify, amongst others, developing the capacity of high level education administrators. The programme does not, however, provide the option of specific pathways for education administrators.

7. Capacity Development

As we began by noting, there are extensive challenges facing teacher training provision in India. It is a tribute to the commitment to improvement that institutions and government have opened themselves to critical and searching scrutiny. In this document we have focused on what needs to be done. We do not doubt the commitment, energy and determination of those with whom we are working to bring about change and improvement. The key to providing capacity at teacher-training level and then subsequently to developing capacity at school level (through pre-service and in-service teacher training) is to identify a group of people in the training institutes who already have those characteristics (expressed as knowledge sets, skills

and dispositions) which contribute to successful teacher training; and then provide the resources and opportunities for this cadre of trainers of trainers to create productive learning environments. We suggest that those trainers of teacher-trainers should have:

- school-based experience, and teacher-training experience, so that they can identify appropriate learning experiences for their students, based on experience rather than idealisation;
- a familiarity with the sites of learning both at teacher training institute and school levels, including taking part in teacher learning communities and engaging in action research processes;
- a capacity to customise their teaching and learning strategies so that they reflect prior knowledge and experience of those teacher-trainers who are acting as learners in a formal learning environment;
- a capacity to experiment in their classrooms;
- a capacity to engage in processes of professional development;
- a capacity to develop a teacher-training curriculum, which includes curriculum standards, content knowledge; teaching and learning approaches; and logistics of use, i.e. when and where they should be used, and to translate this into a learning experience for their students.

8. The Combined Use of Face-to-Face and Online Components (Blended Learning)

In order to overcome physical barriers and thereby increase the accessibility to professional development, dialogue and exchange between teachers, programmes of professional development can combine face-to-face and online components. The inclusion of a learning platform has several advantages:

- Current research in teacher development clearly stresses the importance of teacher-centred, individualized coaching that takes place in real world institutional settings. Online professional development is poised to meet these demands as it offers flexibility, choice and self-reflection. It can thereby have a more direct and positive impact on actual teaching practices.
- Networks created through online platforms allow teachers to relate to each other beyond the confines of their discipline, level and school context. The established collaborative network will thereby amplify the possibilities of community building and hence of learning from and communicating with others from a variety of different backgrounds and contexts.
- Apart from learning about curricular objectives and elements, about material development and general and disciplinary specific pedagogic strategies, teacher trainers can also acquire computer and internet skills in the process. This will enable them to start integrating technology into their own classrooms.
- Moreover, they adopt the perspective of the learner in the process which in turn increases their empathy for their students and thus helps to raise the quality of their instruction.

While there are many advantages of the inclusion of a blended learning component into a professional development programme, some caveats have to be made: the design and maintenance of the platform requires a considerable amount of work and hence signifies costs. In addition to this, computers or internet access may be limited, and teachers and students may not be willing to use this modality.

Appendix 1: Module Example

Classroom Management: Learning Outcomes or Curriculum Standards

- Understand the different models of classroom management, with particular reference to the maintenance of discipline and maintaining a positive learning environment, and how they are applicable in different contexts;
- Develop classroom teaching dispositions, relating to performance, behaviour, communication, and relations with students;
- Develop a capacity to use appropriate classroom management strategies, with particular reference to discipline-maintenance and maintaining a positive learning environment, in the school classroom;
- Understand the characteristics and purposes of different communicative approaches and how they can be used in the school classroom;
- Develop strategies for the use of these different communicative approaches in the school classroom;
- Deploy these communicative approaches at appropriate moments and in appropriate circumstances in the school classroom;
- Identify the five types of classroom talk and understand how they can be deployed;
- Develop strategies for the use of these types of talk in the school classroom;
- Deploy these types of talk at appropriate moments and in appropriate circumstances in the school classroom;
- Understand how the different types of teacher-student groupings can be used in the school classroom, and the value and purpose of each;
- Develop strategies for the use of these teacher-student groupings in the school classroom;
- Deploy these teacher-student groupings, individually and in combination, at appropriate moments in appropriate circumstances in the school classroom;
- Understand the characteristics and functions of task, process, self-regulating, and personal evaluation and affect forms of feedback and how they can operate in the school classroom;
- Develop strategies for the use of task, process, self-regulating, and personal evaluation and affect forms of feedback in the school classroom;
- Deploy these feedback strategies at appropriate moments and in appropriate circumstances in the school classroom;

- Understand the characteristics and function of student classroom technologies (i.e. word-processing, use of the internet, creating spreadsheets and databases, using email and other communicative devices, using presentation devices, digital camera work, digital video work, creating web pages, video-conferencing, reading books, using work sheets, and creating displays), and how they can be used in the school classroom;
- Develop strategies for the use of these student classroom technologies in the school classroom;
- Deploy these student classroom technologies at appropriate moments and in appropriate circumstances in the school classroom;
- Understand the characteristics and functions of teacher classroom technologies (i.e. digital games, simulations, social networking, inscription, preparation, communication devices, displays as aids to instruction, classroom management devices, and storage devices), and how they can be used in the school classroom;
- Develop strategies for the use of these teacher classroom technologies in the school classroom;
- Deploy these teacher classroom technologies at appropriate moments and in appropriate circumstances in the school classroom.

Appendix 2: Dispositional Learning

Here is a list of learning outcomes or curriculum standards for an ideal model of pre-service teacher training with a designation of whether they refer to knowledge, skills or dispositions (See Productive Practices (1) (2) and (3) - Teacher Education).

- Master a body of knowledge (which includes cognitions, skills and dispositions), that constitutes the content knowledge domain in teaching. (Knowledge)
- Understand how this body of knowledge (which includes cognitions, skills and dispositions) can be translated into pedagogic knowledge, and develop the capacity to translate the one into the other. (Knowledge and Skill)
- Develop understandings of the contents of the four foundational bodies of knowledge, i.e. psychology of education, sociology of education, history of education, and philosophy of education; and their applications in schools. (Knowledge)
- Acquire knowledge of systemic and institutional educational structures in India. (Knowledge)
- Develop the capacity to undertake action research projects and to take part in teacher learning communities. (Skill and Disposition)
- Develop classroom teaching dispositions related to performance, behaviour, communication, and relations with students. (Disposition)

- Develop the capacity to apply knowledge, skills and dispositions in educational settings. (Skill and Disposition)
- Understand the ethical dimensions of common situations faced by teachers in school settings, develop and put into operation an appropriate plan of action in the workplace in response to an ethical dilemma, and develop the capacity to behave in ethically appropriate ways in different circumstances. (Knowledge, Skill and Disposition)
- Develop the capacity to appropriate and apply professional standards in real-life educational settings. (Disposition)
- Develop the capacity for independent and workplace learning over the life-span of a professional career. (Disposition)
- Understand the different models of classroom management, with particular reference to the maintenance of discipline and maintaining a positive learning environment, and how they are applicable in different contexts. (Knowledge)
- Develop a capacity to use appropriate classroom management strategies, with particular reference to discipline-maintenance and maintaining a positive learning environment, in the school classroom. (Disposition)
- Understand the general principles of learning, and in particular, how all learning is context-specific and related to developmental stage; develop strategies for applying each of the theories of learning in the classroom; develop the capacity to apply the various teaching and learning strategies in the classroom; and develop those dispositions which are required for implementation of these teaching strategies. (Knowledge, Skill and Disposition)
- Develop the capacities for, and dispositions relating to, planning and anticipation. (Disposition)
- Develop the capacity to read and construct educational texts, such as national, state or district curricula, syllabi, textbooks, policy and media documents, where those capacities refer to critical thinking, educational literacy, re-conceptualisation, and textual application. (Skill)
- Use the spoken and written language clearly, fluently and appropriately to interact in different educational contexts; and recognise and appreciate the country's linguistic diversity. (Skill and Disposition)
- Use arguments and reasoning when analysing situations, identifying problems, formulating questions, expressing judgements and providing solutions to problems. (Knowledge, Skill and Disposition)
- Select, analyse, evaluate and share information from different sources, and use the technical resources available for in-depth study and continuous extension of their knowledge. (Knowledge and Skill)

- Be familiar with the human rights and values that favour democratic life, putting them into practice when analysing situations and making decisions responsibly and in accordance with the law. (Knowledge, Skill and Disposition)
- Recognise and value different cultural practices and processes, and contribute to respectful coexistence with regards to social, ethnic, cultural and linguistic diversity. (Knowledge, Skill and Disposition)
- Develop knowledge of self; the capacity to project the self in present and future educational settings; and the capacity to regulate the self. (Knowledge and Disposition)

It is important to distinguish between knowledge, skills, and dispositions because each of these requires a different learning approach for the student-teacher or practitioner-teacher. Though the distinction between knowledge and skill is not clear-cut, we can distinguish between knowledge as conceptual, i.e. knowing that something is the case or has been the case in the past, and skill as procedural, i.e. knowing how to do something. In many discussions of learning it is conceptual learning that is sometimes privileged over learning practical skills. We are suggesting that this privileging should not be reflected in any pre-service or in-service programme, because this produces binary forms such as education/training, theory/practice, and academic/vocational, which have divided education and thus have not been particularly productive.

In addition, there is a further category of learning outcome or curriculum standard - dispositional learning. This is learning which refers to relatively stable habits of mind and body, sensitivities to occasion (i.e. classroom activities) and participation repertoires (i.e. going on in practice of teaching). In addition, knowledge and skills are more likely to be applied effectively if the appropriate dispositions have been learnt and are in place. The important point to reiterate is that different types of learning outcome or curriculum standard, expressed as knowledge sets, skills or dispositions, require different learning approaches, i.e. observation, coaching, goal-orientated learning and anticipation, mentoring, peer learning, simulation, instruction, concept formation, reflection, meta-cognition, problem-solving, practice, or combinations of these.