

Concept Note
for
**Workshop for approving the ICT Textbook and designing the OER process for
Telangana Education Department**
Oct 17 – 21, 2016

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1 Background

The objective of the state education department is to integrate technology into teaching and learning in sustained and meaningful ways. The department is focused on upgrading the school labs in 3,000 schools by building a digital lab and through equipping the classrooms with digital resources.

In this context, it is proposed:

1. to evolve a meaningful curriculum for students and develop student and teacher materials
2. develop a process map and design for digital content creation in the state in the form of OER

During a consultative meeting conducted on Sep 16-17, 2016, a core group of teachers, teacher educators met and decided on the following course of action (detailed minutes attached):

1. Develop the textbook for students as two Books (for 6-8 and 9-10) and develop Book 1 for the current year 2016-17
2. Develop a resource platform for collaborative creation of resources by teachers and link this to the State Repository of OER through a process of self, peer and expert review

The textbook and resource portal have been designed and a workshop has been convened from Oct 17-21 to review the textbook and the resource portal.

2 Objectives of the workshop

1. To discuss, review and approve the proposed content of the textbook, activities of the student textbook and confirm alignment to the Telangana core curriculum
2. To discuss, review and approve the teacher handbook, mapped to the student textbook

3. To discuss, review and approve the layout of the printed and digital versions of the ICT syllabus and materials
4. To review the layout, design and process documentation of the wiki resource repository for teachers' resource creations to be shared and design linkages with the State Repository of OER
5. To explore the application of the principles of Technological Pedagogical Content Knowledge, in the textbook as well as the OER
6. To develop an implementation plan for the ICT syllabus, textbook dissemination and training

3 Agenda and Methodology

The agenda will have three main focus areas:

1. Review and approval of the textbook and handbook
2. Review of the design for the resource repository and OER processes
3. Implementation plan

Detailed agenda is attached.

3.1 Expected Participants

For optimal discussions, we suggest the following participant list.

1. Prof Upender Reddy – for overall review and direction setting
2. Core group for review and approval of textbooks
3. Teams of teachers (3-5 per subjects, maths, science, social science and languages) who will work with the core team members to review the activities and content; this team will also work with the tools/ activities
4. These teams will also familiarize themselves with the resource repository
5. Expert review – suggested members include Prof Paily, RIE, Dr. Manas, CEMCA, other educators/ teacher educators from the state
6. Participation from DITE&C is required to finalize the design of the OER repository

3.2 Methodology

1. The team from ITfC will present the textbook. In small groups, the core team and teachers will review separate sections of the textbook. Four sub groups are to be formed – with 1-2 core team members and 3-5 teachers for reviewing different sections of the textbook and associated part of teacher handbook. The small groups will also periodically interact with each other. There will be a suggested checklist with parameters for review, the core group can add or modify these parameters as required. Once the small groups have reviewed and exchanged the feedback, the comments will be compiled and ITfC team will incorporate/ refine and respond ; after the discussions each section will be finalized. The finalized version of the textbook and handbook will be uploaded on a web portal.

2. The ITfC team will present the resource repository focusing on:
 - i. principles of resource repository design
 - ii. features of the resource repository design
 - iii. resource creation, review and upload processes and
 - iv. suggested linkage with state and national repositories

The small groups as formed before will explore the repository, review the design, layout, organization and processes of the resource creation and suggest changes/ give feedback. These will be incorporated and presented. There will be a suggested checklist for resource review as well.

3. On the last day, the finalized textbook content and resource portal will be presented for review by experts and approval. We request a presentation to the Commissioner.

4 Principles of the design of the textbook

4.1 Philosophy of the book

The National ICT Policy articulated the vision for ICT in Education in terms building the skills of computing, creating and collaborating through safe, ethical, legal means of using ICT. The NCERT ICT curriculum has been designed keeping in mind the various possibilities of creative expression possible through ICT applications and platforms available today and also seeks to build a mindset that will explore and such applications on an ongoing basis. Such an exploration requires a technology environment that is free and open; this has been recommended both in the ICT Policy and NCERT curriculum. The textbook has therefore introduced different digital processes predominantly through free and open source applications.

4.2 Curricular approach

1. The textbook has been designed based on the NCERT ICT curriculum – focusing on creating original content, sharing and learning and on educational and learning processes
2. Ability to handle an ICT environment for the above outcomes, rather than learn specific applications is the focus of this textbook
3. The 3-level curriculum has been split across two books – Book 1 (for class 6-8) and Book 2 (for class 9-10). Within Book 1, there are three levels proposed – based on the extent of digital skills anticipated and the academic levels expected
4. Over the two books, it is expected to realize the levels outlined in the NCERT ICT curriculum
5. The focus is on learning skills of computing and developing competencies to interact with ICT, as envisaged in the National ICT Policy. Therefore, a wide variety of applications has been introduced. The choice of applications – both generic and subject specific – has been made in such a way as to introduce students to the possibilities of creating and learning with ICT.

4.3 Pedagogic approach

1. The textbook has been developed based on the Technological Pedagogical Content Knowledge (TPACK)¹ framework where technology is not introduced as a stand-alone, tool-based method but integrated within core academic processes relevant to school learning. Hence the activities have been described in terms of processes of learning rather than steps of using an application.
2. The second important emphasis in the textbook is on the possibilities of creation using ICT. Hence the book has been written as a set of projects that invoke several learning processes and integrating ICT meaningfully into the processes, allowing multiple possibilities for student creation. Steps of working with various tools and applications has been left as incidental learning.
3. Collaborating and learning is another important aspect of ICT. The activities in the textbook have been designed so as to allow for group work and adequate opportunities for peer learning. It is intended that different activities be taken up by different student groups to allow for a wide variety of creations; thus allowing for learning and sharing.
4. It is also intended that the activities be done in a cumulative manner, across different themes of the curriculum as well as across levels. It is possible to assess formatively the process of working through the projects with various digital methods and tools as well as evaluate the finished product, which will be in the form of a digital portfolio.
5. All activities need not be completed by all teachers. The teacher can assess the learning contexts, needs and transact the activities that will be most effective. Teacher is encouraged to introduce variations into the activities that may make them more useful for student learning

5 Principles of the design of the OER portal

5.1 Resource creation as a method of building TPACK

Creating resources has been acknowledged as a method of teacher professional development. The process of resource creation, especially digital resources in multiple formats, can enable integration of teachers' knowledge of teaching learning with the possibilities of digital methods. Hence the resource repository is based on an integrated approach to a lesson where technology is integrated into the representation of content and development of new methodologies, rather than as a mere digital representation of printed textbook content. The resource portal also seeks to combine multiple formats of resources – image, audio visual, simulations, textual – to demonstrate the teaching possibilities from each.

¹Prof. Punya Mishra and Dr Koehler (2006) in their 'Technology-Pedagogy-Content-Knowledge framework, suggest that knowledge of digital technologies impact and are impacted by knowledge of the teaching-learning processes.

5.2 Collaborative creation as a model of curricular resource making

Professional learning communities are now acknowledged as methods of teacher development. Practising teachers will create contextual resources that are likely to reflect the reality of the classroom contexts and hence these curricular materials would be valuable. When these resources get discussed in a PLC, the process of review and feedback can have the twin benefits of teacher learning and resource creation.

Digital methods allow the extension of the resource centre beyond the physical space and can sustain a PLC over time and space. Resources created by teachers can keep the teacher community interactions alive and the teacher community provides a source of resources.

We are also suggesting a multi-step process of resource creation and upload through a combination of self, peer and expert reviews and connecting to the SROER and NROER repositories.

5.3 Use of a collaborative platform

To allow for such a collaborative creation, it is important to use a platform that allows multiple users to collectively create knowledge. Mediawiki, the software used by Wikipedia, allows for such a collaborative creation, as well as possibilities of combining multiple kinds of resources.

The portal has been designed with the following parameters:

- i. Ease of creation, adding and editing (multiple users have to edit)
- ii. Using a stable technology – which has proven reliable for large communities of users
- iii. Possibility of combining multiple types of resources
- iv. Possibility of structuring resources based on expected use (activities for teaching, self learning, assessment, etc) through design of different templates
- v. Ease of creating in Indic languages
- vi. Using a free and open technology that is browser and operating system independent
- vii. Multiple ways of resource contribution

6 Expected outcomes

1. Review and approval of the textbook and teacher handbook for the ICT syllabus implementation
2. Approval for the design, layout and structure and templates for the resource repository, including linkages with the state repository in terms of architecture, content and process
3. Development of a process document for the resource creation-review-feedback-upload cycle
4. Development of an implementation plan for the teacher training and orientation for the textbook and the resource portal