
UNIT 13 ICT FOR EDUCATIONAL MANAGEMENT

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13.1 INTRODUCTION

ICT today offers umpteen opportunities for changes in various school related processes like learning, teaching and managing. Schools have to avail of these opportunities to bring in drastic changes in infrastructure, and improve skill-sets required by teachers and administrative staff to manage school functioning. ICT provides tools for addressing the problems of school system.

It goes without saying that ICT plays a vital role in improving the overall effectiveness of the school system. ICT-equipped schools are aptly called 'Smart Schools' today.

In this unit, we will discuss how ICT and its tools can help teachers and administrators improve and streamline their management system and its multifarious activities.

13.2 OBJECTIVES

After going through this Unit, you will be able to:

- explain the concept of educational management;
- provide an overview of importance of ICT for school administration and management;
- explain the use of enterprise resource planning (ERP) in education;
- describe the role of ICT in school record keeping and its maintenance;
- use various technologies for record keeping and scheduling;
- explain the role and functions of school management system (MIS);
- use ICT for financial management;
- use technology effectively for communicating with parents; and
- describe various government initiatives for use of ICT in education.

13.3 DEFINING EDUCATIONAL MANAGEMENT AND ADMINISTRATION

Let us understand the meaning of management and administration. To put it simply: Management involves five basic functions: planning, organizing, coordinating, commanding, and controlling. It can be applied across a host of areas and disciplines. As we may see that **Planning** is deciding for future and generating plans for action. **Organizing** is ensuring that human and non human resources are available; **Coordinating** is placing or creating a framework or structure in such a way that organization's goals can be accomplished; **Directing** is assessing the amount and kind of work and getting people to do it; and **Controlling** is checking progress in context of the plans made during planning stage.

Administration and management are sometimes looked upon as synonyms, but the distinction between the two was pointed out by Oliver Sheldon (1923), who categorized administration to be decision making and management to be the executive function. The conflicting views on this show three main viewpoints:

- i) Administration is a determinative function and Management is a executive function.
- ii) Administration is part of Management i.e. Management is a generic term and includes Administration.
- iii) There is no distinction between Management and Administration.

(Reference: Unit-1. MES-041; Growth and Development of Educational Management)

Management is pervasive and is needed in all areas of society. Educational Institutions are the places designated for providing learning experiences to learners in order to impart knowledge, skills, values, attitudes, etc. with the ultimate aim of making them productive members of society. Managing educational institutions, therefore, involve planning, organizing, directing and controlling the activities of an institution. The optimum utilization of physical and human resources is the main goal of educational management.

Educational Management needs managers with multi-skill sets. These include managerial; financial; accounting and budgeting; commercial; technical and security skills besides human skills.

Four kinds of important managerial skills are defined below:

- 1) **Technical skills:** These skills refer to the ability of a person to carry out a specific activity. The knowledge of methods, procedures and processes is very important for managerial supervision.
- 2) **Human skills:** These skills refer to the ability of a person to work well with other persons in the group: to lead; to motivate; create an environment conducive to accomplishment of assigned tasks.
- 3) **Conceptual skills:** These skills refer to the ability of a person to conceptualize abstract situations to understand and coordinate the full range of institutional objectives and activities.
- 4) **Administrative skills:** These skills refer to planning, organizing, motivating, directing, controlling and coordinating.

(Reference: Unit-1. MES-041; Growth and Development of Educational Management)

We will be studying about how ICT has influenced management of educational institutions.

13.4 IMPORTANCE OF ICT IN EDUCATIONAL MANAGEMENT

The field of education has seen rapid and exponential growth over the years. It has made administration and management of academic sector a complex task. The ICT and its various tools have tried to make changes in the administrative system to enhance its efficiency and efficacy. In this section, you will study about how ICT has changed administration and management processes in the educational system and how educational institutions are adopting e-governance and automated school management programmes. This needs capacity building of the stakeholders for its implementation.

13.5 APPLICATION OF ICT IN EDUCATIONAL MANAGEMENT(E-GOVERNANCE)

Educational management involves a lot of activities like admission, record keeping, resource management, etc. ICT plays a vital role in supporting all these activities in an efficient manner. It can be used right from student administration to various resource administration in an education institution.

ICT can be used for three major areas of educational management :

- 1) **Learner-related:** Admissions; registration / enrolment; time table / class schedule in electronic form; attendance of students; report card; hostel, transport, etc.
- 2) **Teacher-related:** Using ICT for teaching-learning activities , also in other areas like maintaining records, service rules, latest decisions from CBSE, NCERT, etc.
- 3) **School Functioning:** Recruitment and work allotment; attendance and leave management; performance appraisal; communication through e-mails, e-

circulars regarding official matters; scheduling / allocation of halls for examinations; application, processing and display of results of students; online fee payment.

13.5.1 School Management Tools

School management essentially involves interactions, communication between all the stakeholders like school management board ,teachers, parents, staff, alumni, community members and others. School management is comprehensive term including school admissions, subject selection, course selection, class and teacher allotment, maintaining records, communicating with parents, preparing various certificates, analyzing various data,etc. School management involves all stakeholders in decision-making process. School manager is entrusted with responsibility of planning policies and their implementation and creating learning environment for students and nurturing their talents.

Thus school management involves many processes like planning, budgeting, accounting, school related processes like timetable, fee collection, staff management, resource management, communication with parents and community. Besides all theses, the school manager should keep himself/herself abreast with the latest developments in the school education, suggestions and guidelines of CBSE, NCERT and the Government of India. All this Herculean tasks need lot of time and energy. Thus to keep pace with time, a school management software would be of immense help for both administrative and managerial purposes. This is in sync with the Digital India movement as well in which digitization of processes is being encouraged to increase efficiency and transparency. A host of software options are available both in ‘proprietary’ and ‘paid category’ as well as free and open source categories.

It is for the school management to decide which suits them most. Here we will be discussing a few school administration software available free of cost.

- **FeKara:** FeKara, will manage your school as you want, from admissions to attendance and examinations to result cards. It is has a free version and a priced version. You may use these as per your need. It has modern administration and management features for educational institutions for learning, administration and management activities. It manages exams, assignments, budgeting and internal messaging. It is not completely free. It has both free and paid versions. The free version is for small schools. Additional data storage and other features are available on payment basis. (Website : <http://fekara.com/>)

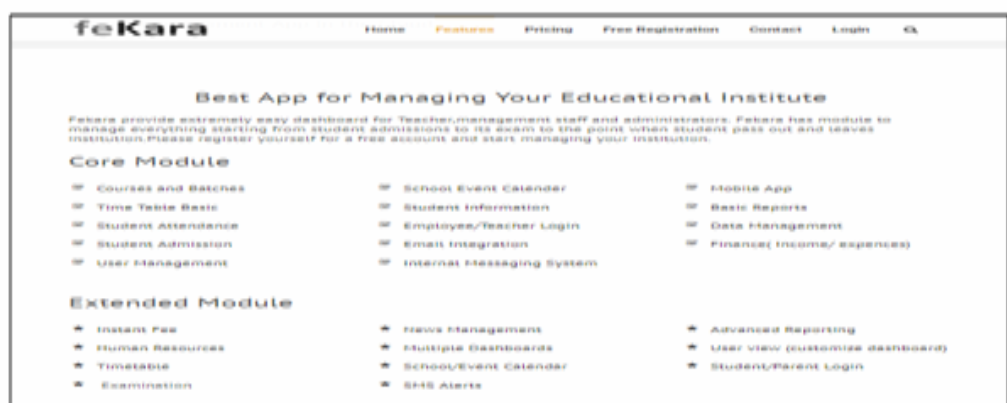


Fig. 13.1: Homepage Fekara

- TS School:** TS School is the short form of Time Software School. It is a school administration and management software which suits all types of schools. It has quite variety of modules for management . Like FeKara, TS School also has a basic version with features but full functionality and support is available for paid version.(Website : <http://www.ts-school.com/>)

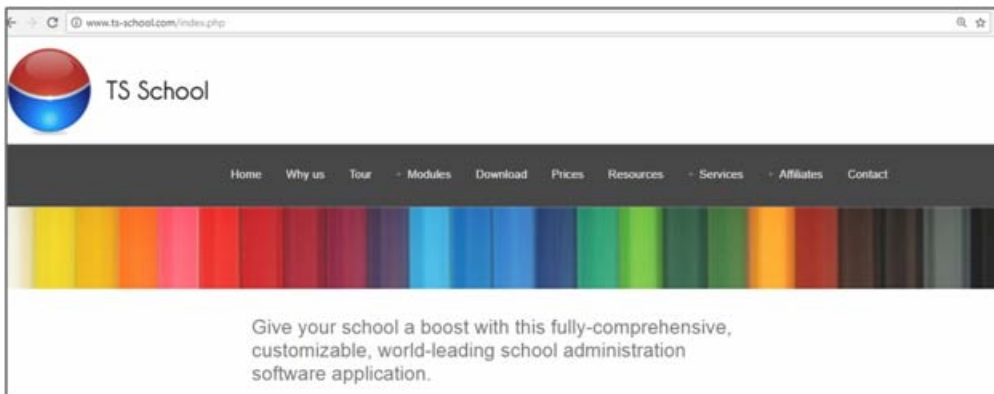


Fig. 13.2: Homepage of TS School

- Fedena:** Fedena is a free and open source school management software to efficiently manage students, teachers, employees, courses and system & process in educational institutions. It is based on ‘Ruby on Rails’, initially developed by a team of developers at Foradian Technologies. The project was made open source by Foradian, and is now maintained by the open source community. (Website : <http://www.projectfedena.org/>)

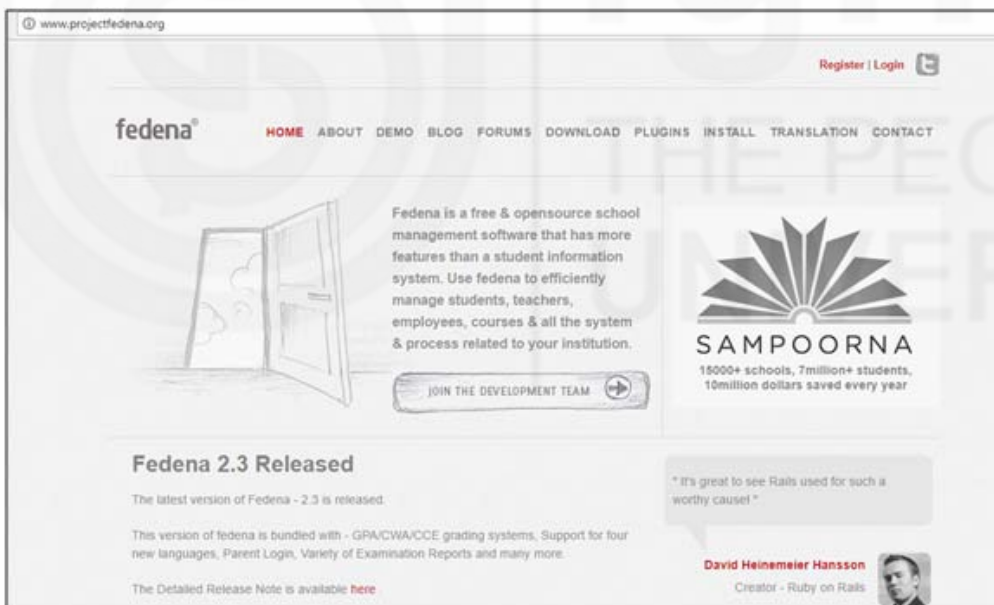


Fig. 13.3: Homepage of Fedena

- SchoolTool:** SchoolTool is a free, open source, web-based student information system. It has features such as customizable student and teacher demographics and other personal data; contact management for teachers, students, and their guardians; Teacher grade books; skill and outcomes based assessment; school wide assessment data collection and report card generation; class attendance and daily participation grades; calendars for the school, groups, individuals, and resource booking; tracking and management of student interventions. It has strong support for customization, deployment with regular updates.

SchoolTool was made with Python, and is run on Linux Ubuntu. It comes with its own web server and database. The only apparent drawback is that it is more teaching learning oriented with teacher supportive features than for administrators like fees and accounting feature. (Website : <http://schooltool.org/>)

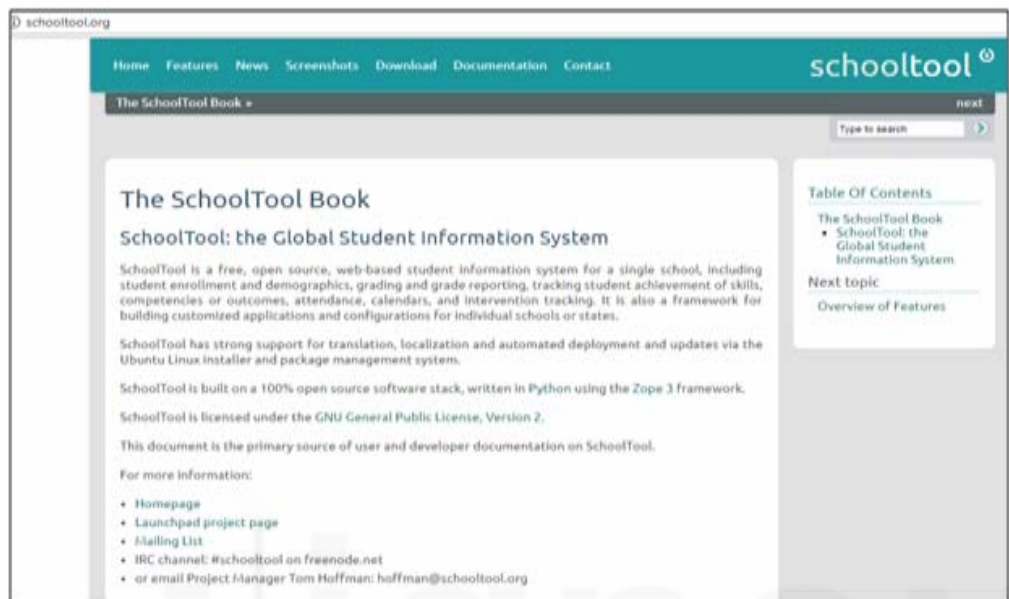


Fig. 13.4: Homepage of School Tool

- **Open Admin for Schools:** ‘Open Admin for Schools’ is a freely available, open source software package and is licensed under the GNU General Public License. Open Admin for Schools offers software features like attendance, reports, management system.

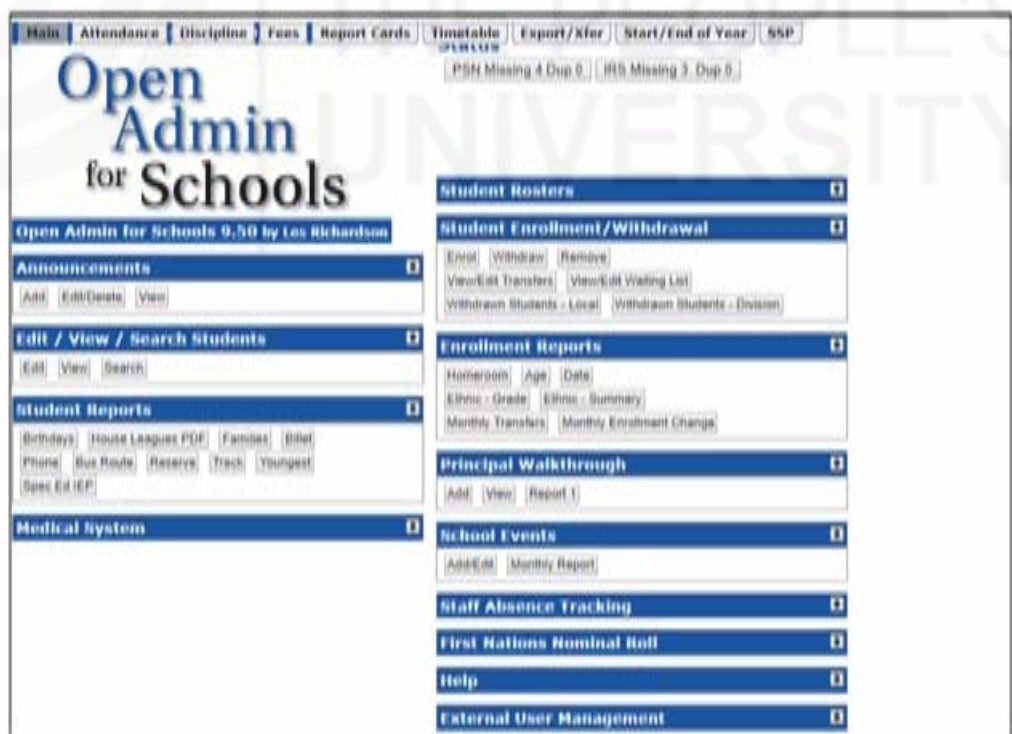


Fig. 13.5: Homepage of Open Admin for Schools

<http://www.openadmin.ca/docs/userdoc-9.00.pdf>

‘Open Admin for Schools’ is one of the most comprehensive free and open-source school administration software options available. Open Admin for

Schools is entirely web based tool. It is designed to be lightweight both in server resource requirements and in communication bandwidth. It currently has the following features:

- **Demographics:** It stores student and family information that can be viewed and printed in a variety of ways.
- **Attendance:** Attendance can be entered by authorized persons.
- **Discipline:** It maintains record of discipline related issues.
- **Report Card System :** The report card system is designed to report on student progress using up to 20 objectives per subject and an unlimited number of subjects. It can be integrated with attendance reporting, etc. Report cards can be printed as PDF reports with customization possible as per requirements.
- **Online Gradebook:** It allows teachers to enter marks and assessments online from school or home.
- **Parent/Student Viewing scripts:** It allows parents to view attendance and report cards
- **A Fee System:** It allows charging of student fee, printing of invoices, payments, invoices and export summary transactions to external accounting programs.
- **Export/Import Modules :** It allows students to easily transfer schools within divisions without re-entry of demographic information. Export of data to other programs via an automated XML based transfer mechanism.
- **An Online Daybook:** It allows teachers to plan and view their lessons/days.

All these softwares are available for schools to choose from as per their need and convenience. Government of India has taken an initiative, ‘**Shala Darpan**’, which is a school Management software towards e-Governance.

Shala Darpan is an initiative to provide services based on School Management Systems to Students, Parents and Communities. The School Information Services include School Profile Management, Student Profile Management, Employee Information, Student Attendance, Leave Management, Report Cards, Curriculum Tracking Custom, SMS Alerts for Parents / Administrators on student & teacher attendance.

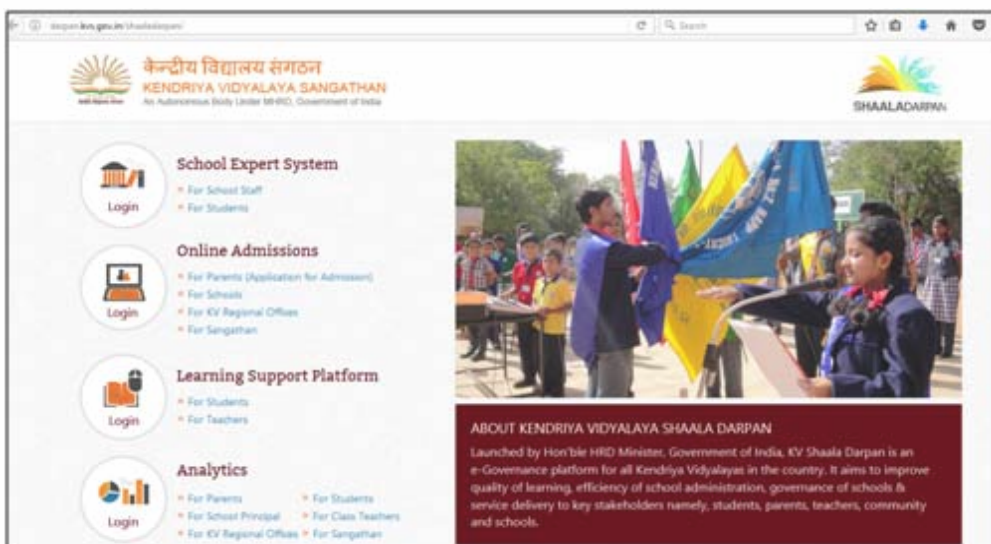


Fig. 13.6: Shala Darpan of Kendriya Vidyalaya Sangathan

Source: darpan.kvs.gov.in/shaladarpan/

In the first phase of “Shaala Darpan Project” launched in June, 2015 covers 1099 Kendriya Vidyalayas through the National Informatics Centre Services Inc. (NICSI). Rajasthan has already started it, so has Gujarat. Other states are also considering and have shown their willingness regarding introduction of similar system in the State Government Schools.

Check Your Progress

Notes: a) Write your answers in the space provided.

b) Compare your answers with the one given at the end of the unit.

1) State whether true or false:

- i) Shala Darpan is social networking site
- ii) Management, involves five basic functions: planning, organizing, coordinating, commanding, and controlling
- iii) Open Admin for Schools is Learning Management System
- iv) Fedana and SchoolTool are School Management Software

13.5.2 Database Management Using ERP for Teachers, Parents, Students and Staff

Database management is one of the important components of educational management as it helps decision making for future and has influence on policy making. It is now being done through the use of ‘Enterprise Resource Planning’ (ERP) which is an enterprise-wide information system designed to coordinate all the resources, information, and activities needed to complete all the organizational processes.

An ERP system is based on a common database and a modular software design. The common database allows every department of an organization to store and retrieve information in real-time. The modular software design means that the organization may select the modules as per their needs without overloading the system with unnecessary modules.

In fact, ERP is used in all types of organizations, be it educational or business; big or small. Institutions use many modules like finance, resources, etc. for effective management in ERP but it needs at least two or more modules integrated as one common database for the system to be called ERP. As ERP brings in efficiency in managing any system, it is very useful in educational institutions. Educational institutions have large number of individuals and as different category like students, teachers, office staff, laboratory staff, etc., managing and tracking the roles, responsibilities and the performance of all is a tremendous task, which can be efficiently tackled by educational ERP.

ERP in educational institutions have many advantages. Let us discuss a few :

- **Cost effective:** It is cost effective in terms of time, and money. The time consuming processes like fee collection, deposition, record maintaining and most important information retrieval can be easily managed by the ERP.
- **Better organization of data:** Since data management is the core of ERP, it allows institutions to organize, reorganize and maintain data in forms where we can retrieve it at any time as per our need and requirement.

- **Security of data:** It is ensured through firewalls and other security measures. The backup in ERP also ensures that we do not lose data at any time.
- **Automation of basic administrative processes:** It is possible as ERP is integrated, the data processing and retrieval is easier and manageable, thus reducing time and manual time and efforts.
- **Management friendly :** As ERP software for education is more automated, it takes less time for data processing. This also helps in analytics which helps the management to take decision on hard facts than presumptions.
- **Supports pedagogy:** As time is saved, teachers are less burdened with nitty gritty of attendance, and other data and thus can focus more on enriching pedagogical methods. It can be productively used for better teaching-learning in classrooms.

The one thing which overshadows all the advantages of ERP is its cost which is prohibitive for small educational institutions. It may prove cost effective in the long run, but the planning and customization is not cost effective for small enterprises.

Another shortcoming is the technical aspect which may appear complex and hard for new users. Thus most ERPs, in practice, are not easy to learn and use. This necessitates continuous user training to ensure optimum benefit from ERP.

In nut shell, we can say that its overall advantage overrules the issues of cost and skill development.

13.5.3 Record Keeping (Medical, History of Learners, Student Result)

Records for any organization are important documents which provide insight into its developmental process over a period of time. Records are meticulously maintained in schools as they are evidences of the growth of children over a period of time.

School records are the information of the academic (scholastic and co-scholastic), administrative (non-scholastic) and other related activities in the school and which are directed towards growth and development of the school.

School records are kept in the form of documents, files, books, CD-ROM, Hard disk and now in cloud. School records are official authentic documents of an action, or an event occurring in school, which the school administration and management considers to be important for posterity.

They include reports, list and data of official happenings related to school and are preserved by school administration in school office. In fact, they are the official transcripts which are considered important by the school administration and management. Therefore, it is imperative that every school must maintain its records systematically for easy validation of its activities organised for growth and development of the school.

Importance of school records: School record is as important to a school as is history important to society. School records tell the history of the school and are useful historical sources for future generations. Thus it provides continuity when

the administration changes over a period of time. School records even help in guidance and counseling services as they provide detail of all round growth and development of students. Thus academic, personal, and career counseling can effectively be provided. Not only for guidance by counselors, school records provide information to parents and guardians enabling them to be partners in all round development of their children/wards. The continuum of learning environment in school and home is very important for balanced development of the child.

School records also provide information about the 'pass out' students which is sought by employers or other higher education or related institutions for admission or placement.

The school records also help the management to plan for the optimum development of schools. The school records also help education departments and ministries in policy making and decision making. It also provides empirical data to supervisors and inspectors of school to make objective assessment of the functioning of schools especially, teaching and learning.

Some Important School Records

Admission Register: It is a permanent and important record book of all the students who are admitted to the school and thus should be maintained and handled carefully and kept in safe custody.

The admission register maintains all the information of the learners like birth certificate, grade card/mark sheet of the last class attended, transfer certificate(TC), etc. All these documents are carefully examined and entered in the admission register. After entry, the documents are preserved and maintained in record keeping storeroom.

As this is an important document, which is referred to again and again by authorities inside and outside school, the entries are carefully done and regularly supervised by seniors. In fact, this is referred to, even in court of law, for issues like date of birth.

Admission register also maintains the exit of the student, if there has been any withdrawals due to any reason. Thus, it also shows the details of education and progress of each pupil in the school. The admission register should contain the following items and any other may be added as per the requirement of the school administration: serial number and name of the pupil; father's name, caste, occupation and address along with mobile and e-mail id; date of birth; date of admission to the school; class to which student is admitted; transfer certificate (in case the admission is in senior classes than the first class); date of withdrawal or migration from the school.

Attendance Register: The attendance register is an important record book in which the presence or absence of students in each and every class and section in the school is recorded on a daily basis. This must be maintained and kept securely by every school.

This record is maintained by the class teacher on individual class and section basis. The attendance is marked at the beginning of the school time. The name of pupils admitted to the class and section are listed and the presence and absence

of the pupil is marked in ink. It is a practice that absent students are marked in red ink. The holidays are also marked in red ink too. No column is left blank as this may be misused later. Every school has its own policy for absenteeism and if the student is absent without leave for more than certain period, the admission may be cancelled or names of students may be struck off rolls. Concisely, its main function, as its name suggests, is to show the presence and absence of every student enrolled in the class. It is good for quick reference regarding regular students and helps in evaluation of learners. It involves calculations like average daily attendance.

Log Book: The log book is a systematically maintained record of events that occur in the school over a period of time. They may be maintained session-wise so that a historical chronological record of the school events which have significant effect on the school's activities is maintained. For example, an orientation for parents held at the beginning of the academic session, visit of an expert, officials from Department of education, should be noted down in the Log book. It should be maintained by the head of the institution or a senior person deputed by the Head and supervised by the Head of the school. It is often seen that the state inspectors of schools usually inspect Log Books during their visits so that they can know school events at a glance.

Visitors Book: As the name suggests, it is a record of the visits of important personalities, which include officials from the department and ministry of education. or other related government agencies or any other school related visitors. In fact, old alumni are also welcomed by school and are invited to put their comments in the visitors' book. Their opinions and suggestions may be very helpful for improving the working of the institution.

Staff and Students' Personal Files: It is necessary that the school should have as much information on every teacher and student as possible without violating their privacy.

Cumulative Record Card: Students' cumulative record card keeps all the information of the students' development over the period the student is in the school. It documents students' cognitive, affective and psycho-motor growth and development which are cumulatively recorded and maintained in this card.

It gives a comprehensive picture of the growth and development of an individual student. This is especially helpful in guidance and counselling. As it is cumulative record, it is developed year by year and is transferred to another school in case the student leaves one school and takes admission in another school.

Students' Report Sheet/Card: Student's report card contains information about child's progress in academics. It is regularly and periodically sent to parents for information sharing. It also contains child's participation in school activities, his/her general behavior in school, his/her health condition, participation in curricular and co-curricular activities and other important information.

Staff Time Book and Movement Book: It is maintained for information as to when staff members report and or leave school or office. It promotes regular attendance and punctuality. It also helps in checking truancy and gross indiscipline in staff. Now-a-days, electronic devices are commonly used for marking attendance and departure time for all employees.

Library Records: Library records are maintained separately by the Librarian, like stock register, issue register, etc. In fact, today many of the routine activities of Library are done using library management software. CDS/ISIS which stands for Computerized Documentation Service / Integrated Set of Information Systems; Koha is the free software library automation package. In use worldwide, its development is steered by a growing community of users collaborating to achieve their technology goals. Koha is a Full-featured ILS in use worldwide in libraries of all sizes. Koha is a true enterprise-class ILS with comprehensive functionality including basic and advanced options. Koha includes modules for acquisition, circulation, cataloging, serials, authorities, flexible reporting, label printing and much more.

Stock Register: It has the record of all equipments and materials available in the school including the laboratories. It also keeps information of all the movable property of the school. After the purchase of an item, it must be entered in the stock register and the unique number allotted to it in the register, is also marked on the equipment . This is to be supervised and verified at least once a year by the school Head. The verification helps to identify the missing items , if any, or damaged items which can be sent for immediate repair or replacement.

The register should contain the information as mentioned in the columns of Table 13.1:

Table 13.1: Stock Register

Sl. No.	Name of the Article	Quantity	Date of Purchase	Name of Supplier	Purchase Order Details	Signature of Authority

Property Register: It is used to keep full records of permanent and non-consumable items of school property.

Cash Book: It is a record of all money transactions occurring day-to-day in the school. Money received by the school from different sources like fees, fines, donations, stipends, scholarships, grant-in-aid, etc. are entered on the credit side. On the debit side, the payments like the salaries of the teachers, stipends, scholarships, contingent expenditure incurred, deposits made in the Treasury, bank and post office are shown. Balance is shown in red ink. It should be regularly written and the day’s business should be closed with the signature of the Head of the school. It is a record of financial transactions in schools. It gives information about income and expenditures. It promotes accountability and prevents corrupt practices. It should be kept up-to-date always.

Potential of ICT in Record Keeping : School records can be effectively and efficiently maintained with the use of ICT such as computers, digital libraries, e-mail, Internet and so on in which information are stored and disseminated. ICT ensures easy availability of information and its retrieval.

School record keeping is all about information collection, storage, retrieval, use, transmission, manipulation and dissemination. It enhances and enriches communication, decision-making and problem solving ability in the school system. It is ,therefore, necessary that this process be as accurate and accessible as possible.

Record keeping involves Database management by professional persons. The softwares like MS excel. MS Access, MySQL, Fox Pro, etc. may be used to maintain Database in schools as it reduces data redundancy, data inconsistency and ensures data security and data sharing.

Check Your Progress

Notes: a) Write your answers in the space provided.

b) Compare your answers with the one given at the end of the unit.

2) List records that help in understanding the growth and development of students.

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3) List the entries made in stock register.

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4) List any two database software.

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13.5.4 Paperless Administration

Paperless administration (or a “paper-free” office) means a ‘work environment’ in which the use of paper is eliminated or greatly reduced. Thus, a paperless environment would mean converting documents and other papers into digital form.

The paperless administration saves money, time and space. It makes information retrieval and sharing easier. It also boosts productivity besides saving time from paper work. Not only the cost of paper is eliminated in monetary terms, its environmental implications are ruled out.

With the current practice of computing on mobile devices, the use of paper in official works is steadily decreasing. This may be attributed to a generation shift; younger people are believed to be less inclined to printed documents, and more inclined to read them on a full-color interactive display screen. The initiatives of Government of India like “Digital India”, “Digilockers” and “travel tickets in digital form”, have helped in moving towards paperless environment. The goal of paperless administration in schools can be achieved through the use of ICT.

One of the tasks that schools face is allocation of duties to the academic and non—academic staff on periodic basis.

13.5.5 Allocation of Duties Among Teachers and Staff

One of the tasks that schools face is allocation of duties to the academic and non—academic staff on periodic basis. Thus, scheduling of duties and roles to all teachers and staff members is crucial to efficient school management. ICT helps in creating a schedules that maximize instructional time, provide time to meet the needs of the school students, provide time for staff to meet, plan, organize various curricular and co-curricular activities of the school. Use of scheduling tools ensures that the school resources are optimally utilized and schools function efficiently.

The scheduling and allocation of duties to teachers and staff needs annual and semester-wise scheduling. Thus, there is need to plan and schedule for one academic year called as School Calendar. This may be further specific as ‘Teaching time table’ and ‘Examination time table’. The co-curricular or extra-curricular activities and the meetings with parents through PTAs may be allocated time.

Many software tools are available which help in allocation of work without overlapping. We discuss two of commonly used tools: Google Calendar and FET time table software.

Google Calendar: Google Calendar is web-based time and task-management online application that allows for access to calendars via web browsers.

It can be used to create calendars for school activities that may be shared with all stakeholders like staff, parents, teachers, and students. It has many provisions, for example, reminders of scheduled activities can be sent via e-mail, text message, or pop-up messages within a web browser. This helps in ‘no missing’ or overlapping of work or time schedules.

Schools can use Google Calendar to manage time, coordinate projects, and share events with others. Academic departments, student clubs, and study groups can create and share Google Calendars. There can be schedules for classes and for individual users as well. There are many ‘view options’ like day, week, month, and year view of the calendar.

Teachers can create assignment schedules, project schedules, etc, to inculcate in learners the habit of timely submissions besides appreciating time management. For learners, Google Calendar offers a way to view up to date class information and helps in collaborating with others.

There are some software for generating schedules and timetables.

FET: FET is free software for automatically scheduling the timetable of an educational institution. It is free software, open source, licensed under GNU/AGPL. The term FET is the abbreviation of 'Free Evolutionary Timetabling'. It is based on C++. Liviu Lalescu of Romania developed this timetable generator in 2003. There is continuous upgrade in the software, the latest being done in August 2017. The focus of updates are user friendliness and scheduling large variety of activities of all groups (classes/courses/ students).

Some of the features of FET are:

- fully automatic generation algorithm, allowing also semi-automatic or manual allocation.
- platform independent implementation.
- import from XML format; CSV format.
- export into HTML, XML and CSV formats.
- flexible student structure, organized into sets: years, groups and subgroups.
- allowing overlapping years and groups and non-overlapping subgroups. You can even define individual students (as separate sets)

Time generation is done once all the relevant data of year, group, category, class, etc. are added. It can be generated in two ways: 'new' or 'multiple variants'. Similarly, view of timetable also has student view, teacher view, room view. Thus, it becomes easy to sort and plan activities.

Timetables can be viewed using web browser. They are saved in html format.

(For details : <http://timetabling.de/manual/FET-manual.en.html>)

13.5.6 Students' Portfolio

Portfolio is collection of artifacts of an individual which showcases individual's set of abilities. When it is created or showcased in electronic form, it is called e-portfolio. It shows the e-learning path and the progress of the learner as one goes learning more and more complex tasks. It facilitates the integration of learning as students connect learning with outcomes. It helps them understand their own learning.

Student's e-portfolio includes any form of learning outcomes like text files, images, multimedia, blog entries, and hyperlinks. E-portfolios are both demonstrations of the learner's abilities and platforms for self-expression. If maintained online, it can be maintained dynamically. It is a type of learning record that provides actual evidence of achievement.

E-portfolios can be of different types:

- i) **Developmental portfolios:** They exhibit the development of student's skills over a period of time. They are like ongoing portfolios. They can be used for regular interaction between teacher and students and includes both self-assessment and reflection/feedback elements.
- ii) **Assessment portfolios:** They showcase student's competence and skill learnt over time and are refined enough to be evaluated. These are for end-of-course evaluation of student's performance.

- ii) **Showcase portfolios:** They demonstrate exemplary work and student skills on completion of the programme and have best outputs by the student. Students typically show this portfolio to potential employers to gain employment at the end of a degree program.

In all types of portfolios, self-reflection is very important for ensuring rich learning experience that e-portfolio development can provide.

In many areas of knowledge like Art, creative writing, evaluation is done mostly through portfolios as it is considered to be a purposeful compilation and reflection of one's work, efforts and progress. Portfolio is considered both as a learning as well as an assessment tool.

Tools for creating e-portfolio

Any tool, which has the potential to showcase the artifacts, can be used for creation of e-portfolio. A simple portfolio can be created using presentation software like PowerPoint. There are many online and offline portfolio tools. One of the open source e-portfolio tool is Mahara, which is a fully featured web application to build your electronic portfolio. You can create journals, upload files, embed social media resources from the web and collaborate with other users in groups. It may be downloaded from <https://mahara.org/>

Activity:

Browse through some sample online e-portfolios. Create an e-portfolio showcasing two of your artifacts.

13.5.7 Managing Assessment and Evaluation

The examination process has undergone a revolution with the advent of ICT making it more effective and efficient. Use of ICT in evaluation involves the use of digital devices to assist in the construction, delivery, storage or reporting of student assessment tasks, responses, grades or feedback. ICT is used to create tests, record, provide immediate feedback, give grades, analyze them students' responses with reference to the quality and relevance of student's response besides helping teacher with learners analytics. Nowadays, ICT based assessment can be used to test a wide range of abilities and skills in students. Still there are a few skill-sets, especially in the affective domain, which might not be suitable for assessment through ICT. But this list is fast diminishing as more innovative uses are coming in. The use of Virtual Labs has helped students learn and their performance can also be assessed in virtual labs.

Geoffrey Crisp (2011) in the Teacher's Handbook on e-Assessment stated that the ICT based assessment can be undertaken:

- through many devices, such as traditional desktop computers or laptops, or portable communication devices such as smart mobile phones, iPads.
- by using a multitude of formats, including text documents or portable document formats, multimedia formats such as sound, video or images; it can involve complex simulations or games;
- in groups or individually by students.
- in synchronous or asynchronous manner.

Christine (2013) identified two conceptually different approaches to assessing Key Competencies using ICT. On the one hand, Computer-Based Assessment (CBA) approaches use multiple-choice questions, while on the other hand, technology-enhanced learning environments offer a promising avenue for embedded assessment of the more complex and behavioral dimensions of Key Competencies, based on Learning Analytics.

Many tools are available to design and development assessment online for learners.

Content Authoring tools: They also have inbuilt options for creating, administering and grading quizzes, and other formats of question for assessment as learner progresses through e-content. Tools like eXelearning, xerte, adapt and Learner Activity Management System (LAMS) are open source authoring tools and can create many assessment types like cloze, multi select, multiple-choice, true-false, fill-in the blanks, matching, drag and drop, etc.

LMS based Assessment tools: Learning management systems (LMS) like Moodle have functionality of creation, administration and management of question banks and items. The type of tests available are quite varied like essay, matching, embedded answers (cloze test / gap fill), multiple-choice, short answer, numerical, true/false, drag and drop, jigsaw, ordering, multi select, etc.

Assessment tools: There are assessment creation tools which can be used to create assessment which can be used innovatively by the teacher. Some of them are described here.

- i) **The Hot Potatoes suite:** It is freeware which includes six applications, enabling you to create interactive multiple-choice, short-answer, jumbled-sentence, crossword, matching/ordering and gap-fill exercises for the World Wide Web.
- ii) **Rogô:** It is a complete assessment management system developed by University of Nottingham . It can be used to create and administer online assessments. This online system supports the full process from question and paper creation to the analysis of examination results and creation of reports. The question types can be multiple-choice questions (MCQ), multiple-response, extended matching, flash interface, fill-in-the-blank, image hotspots, labeling, likert scales, ranking, script concordance test (SCT), text boxes, and true-false. It can be used for formative as well as summative examinations, surveys and several other examinations.

Activity:

Find out two more assessment tools and make a comparative analysis of the features of these tools.

These tools can be used for continuous assessment as well as term end or final examination. There can be many variations to use online assessment and it is up to the teachers and administration to use appropriate ICT tools for conduct of examination. The concept of on-demand examination and walk-in examination is possible only due to use of ICT tools in examination.

13.6 USE OF ICT IN FINANCIAL MANAGEMENT

Financial management is crucial for well-being of any educational institution, be it a school/college/university. For effective functioning of the school, adequate funding for day-to-day needs is very important as well as for planning its growth and development. Finances lie at the pivot of any activity school undertakes. Any error in financial management has ripple effect on all the activities of the school. This has serious implication on the teaching-learning activities as well.

The school principal is the authority for the day-to-day financial management of the school. The responsibility of monitoring and controlling school expenditure as per the sanctioned plan and budget lies with the school principal. The principal in turn report, on financial management, to higher authorities like to a board of trustees in case of private management or to officers in Directorate of Education of the Government in case of Government schools. The maintenance of financial records and their reporting is to be done by the principal.

13.6.1 Managing Students Fee Record

The unit responsible for fee collection is one of the most significant units of a school. Earlier all fees were collected manually and fee days were allotted for each class and section. Thus manual collection of fees involved handling of a lot of cash, issuing receipts and entering records. It was time consuming both for administration and parents. Thus fee management is one of the most important aspects of financial management of a school. ICT has influenced the way school fees are collected and managed.

The School Fee Management System: The School Fee Management System allows for fast data entry and faster voucher printing. It also allows for flexible fee structures so that multiple types of fee heads can be managed efficiently. It allows for creation of multiple fee schedules as per the need of the individual and the system. There must be multiple user logins with strict security and permissions.

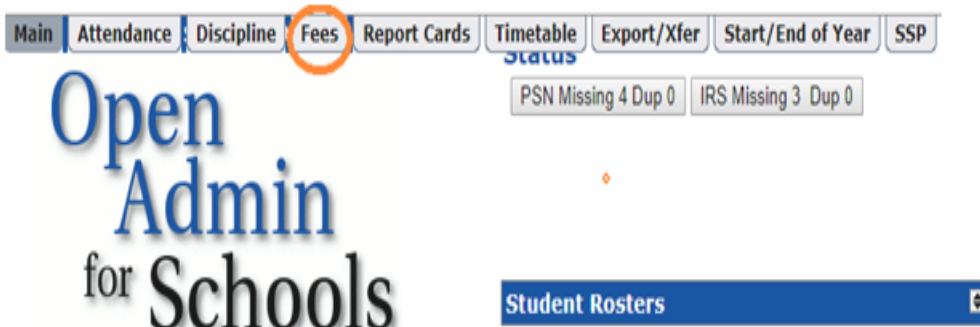
The fee management system can generate all variation of invoices needed in the system like monthly fee invoices; student wise fee invoices; class wise fee invoices; penalty invoices; paid/non-paid status reports; and generate auto invoice/reports; print invoices/vouchers in PDF, Excel format; discount on fees/fine

As discussed in earlier section, the fee module is part of many school management softwares, thus having integrated information and reporting with attendance module.

Open Admin has Fee management wherein fees can be collected as per context or a pre-defined slab or category.

The School Fee Management System of Open Admin for Schools is user friendly and does not need high technical skills. A user can create fee structures, enter fee dues and receive payments. All the fee transactions are automatically updated in the system and integrated user updated information is created and updated which may be availed at any point of time.

In some systems, provision of online payment is there and thus facilitates both the parents and the management as the physical management of the cash is to be handled, sorted. Thus, depositing in bank is reduced.



Open Admin for Schools

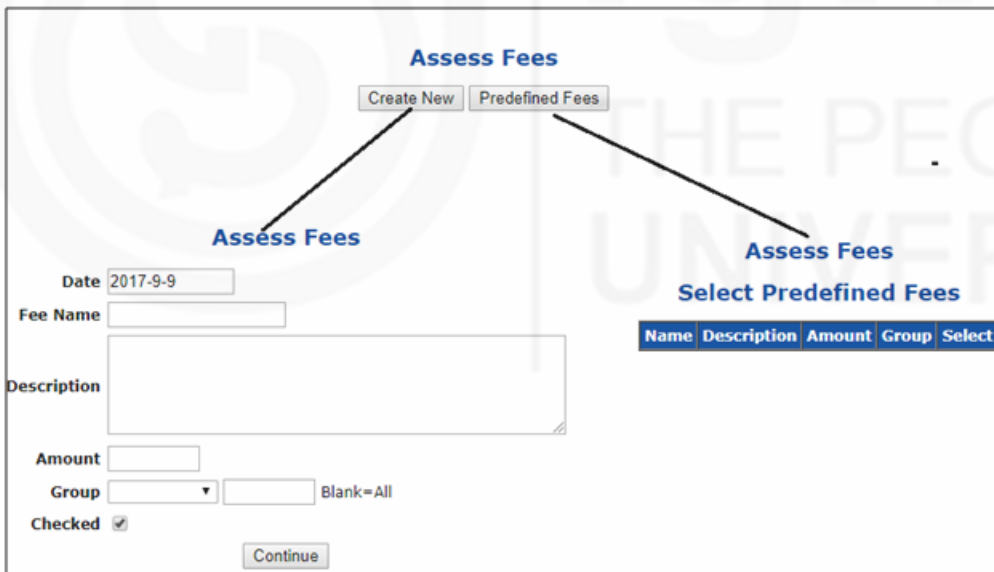
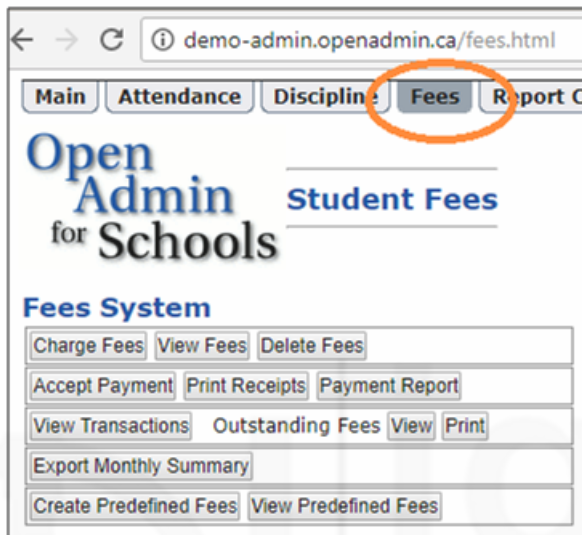


Fig. 13.7: Fee Management System in Open Admin for Schools

13.6.2 Managing School Budget

One of the main components of financial management of schools is the preparation of school budget. It helps in matching the finances available with the planning of development. It is also the process of allocation of the available resources to the prioritized needs of an organization. The budget is part and product of planning process. Since utilization of budget involves legal matter, the responsibility of utilizing budget is bestowed on competent authorities of the school. Preparation of school budget is an important activity of school administration. For a school, preparation of school budget is important for both planning and evaluation of

school activities. It links school goals with instructional plans. For example, an activity based instructional plan will require budget provisions for the resources and infrastructure for conduction of the activity in the class. The link between instructional goals and financial planning is critical to effective budgeting.

There are softwares available for preparation of budgets for schools like **School Budget Programme**. It is a stand-alone solution that is designed to assist schools with the task of tracking department budget allocations that are dispersed among various teachers. It is tailor made for schools, and provides facility to track and manage departmental budgets. **SBS Online** is another budget management tool for education. It is secured cloud-based budget management system, incorporating budget planning and monitoring in one. It has provisions of planning, report generation; salary, budget monitoring, etc. It has provisions of contextualization as per the requirement. Another software is **HCSS Budgeting**, which has been exclusively designed by finance specialists dealing with education and helps schools and academies plan how to utilize their money. It can be used to forecast budgets up to five years in advance and allows schools to plan for changing circumstances, such as cuts in funding or increases in staffing cost. Schools and academies can use the software for day-to-day management of budget but it can also help with deficit recovery. HCSS Budgeting also links seamlessly with our accounting package i.e. HCSS Accounting, to allow finance teams to track real-time spending against planned expenditure.

13.6.3 Accounting

Information and Communication Technology (ICT), as in other fields, has significant applications in Accounting. Account management is one of most important functions of the financial activity. It helps in developing a systematic system to record financial transactions properly and to track them accurately. The entry of ledgers and cash books manually is replaced by the use of computers. Accounting software are available to keep track of single financial transaction and to report it whenever the need be.

There are many accounting software. An Accounting software stores and manages all data regarding the bank transaction as well as collection of student fee or any expenses. Details of vouchers and imprest money as well as total income and expenses are managed precisely by the accounting software module. A school accounting software easily maintains details of student fees, employee expenses, school expenses and covers all the financial activities. It provides an efficient solution to management of accounts .

GnuCash is a personal and small-business financial-accounting software, freely licensed under the GNU GPL and available for GNU/Linux. It is powerful and flexible and still easy to use, GnuCash allows you to track bank accounts, stocks, income and expenses. As quick and intuitive to use as a checkbook register, it is based on professional accounting principles to ensure balanced books and accurate reports. It has features of QIF/OFX/HBCI Import, Transaction Matching ; Reports, Graphs; Scheduled Transactions; Financial Calculations; Double-Entry Accounting; Stock/Bond/Mutual Fund Accounts; Small-Business Accounting ;Customers, Vendors, Jobs, Invoices, A/P, A/R. It can be downloaded from <https://www.schoolforge.net>

Free and open source software is SQL-Ledger® ERP which is a double entry accounting/ERP system. Accounting data is stored in a SQL database server. For

the display, any text or GUI browser can be used. The entire system is linked through a chart of accounts. Each item in inventory is linked to income, expense, inventory and tax accounts. When items are sold and purchased, the accounts are automatically updated.

Many School Accounting software are proprietary software which are easily available and may be used as per requirement. Some of them are black baud; School Accounting, Zoho books, MySchoolAccounting. SlickPie has free version as well as paid version.

13.6.4 ICT for Resource Planning and Sharing

The use of ICT in resource planning and sharing necessitates management of ICT infrastructure. This infrastructure comprises a set of hardware, software, services, procedures, processes and persons. The infrastructure is not separated but it interacts with environment both physical and human for its optimum use.

One of the initiatives of Government of India is E-Pathshala. It has been developed by NCERT. It showcases and disseminates all educational e-resources such as textbooks, audio- video programmes, periodicals and a variety of other print and non-print materials through website and mobile app. The platform addresses the dual challenges of reaching out to a diverse clientele and bridging the digital divide (geographical, socio-cultural and linguistic). It offers a comparable quality of e-contents and ensures its free access at every time and every place. All the concerned stakeholders such as students, teachers, educators and parents can access e-books through multiple technology platforms i.e. mobile phones (android and windows platforms), and tablets (as e-pub) and on web through laptops and desktops (as flipbooks).

All the NCERT books have been digitized and uploaded on E-Pathshala. Currently, the e-contents are available in Hindi, English and Urdu. States/ UTs are being approached to digitize and share all textbooks in Indian languages through this platform in a phased manner. Both web portal and Mobile App of e-Pathshala are available to all for use. (<http://mhrd.gov.in/ICT-Initiatives-e-Pathshala>).

ICT Managed School Processes

As discussed in the above sections, school should adopt ICT for their administration and management i.e. adopt or adapt e-governance.

This will automate many school administration processes and thus there is need to build capacities for its implementation. The school based Management Information System (MIS) should be strengthened for optimum planning. It should be comprehensive, integrated and sustainable. The MIS will have all details of resources so that their use and sharing is possible both within the school and with other schools. The school local area network (LAN) can help in automating the school processes. A school local area network will help in automation of many office processes like maintenance of records, student related process, resource mapping, planning, sharing and using of existing resources. This will save on cost, time and effort.

These school based MISs will be integrated with the 'state- wide web' based School Education Management Information System.

This in turn will be linked to a nationwide network of all schools wherein teachers, students, school managers, and the community would participate for collaborating and sharing digital repositories of tools, content and resources; professional development and continuing education platforms; and guidance, counseling and other student support services.

Thus, the integrated School Management Information System (School MIS) will emerge as a single window portal where all resources and other information related to the secondary school system are located for all to access and benefit from.

Such a Management and Information System (MIS) helps in research and analysis activities as well as planning and policy related issues. MIS facilitates universal access to information, content and resources.

The Central Board of Secondary Education (CBSE) developed a support system called 'Saransh' with a vision to improve children's education by enhancing interaction among schools and parents. This support system assists them in taking best decisions for their children's future (MHRD).

This tool allows schools through the available data analysis to identify areas of improvement in students, teachers and curriculum and take necessary measures to implement change by comparison of results.

The mobile App for Saransh was also launched in 2015 which enables the parents and students to look at and compare their results vis-a-vis school, state and national level. In fact "Saransh" was conferred with the e-India 2015 Award for 'Best Government Initiative in Education' (<http://mhrd.gov.in/ICT-Initiatives-Saransh>)

Another initiative 'I-share for India' which is an initiative for creation of educational resources pool for School and Teacher Education, includes mobile enabled Apps / Web based ICT supplementary resources of school education and teacher education in any Indian language.

Check Your Progress

Choose the correct answer:

- 5) E-portfolio can be used for
 - a) Assessment
 - b) Developmental
 - c) Showcase
 - d) all of the above
- 6) E portfolio creation tool is
 - a) Mahara
 - b) Skype
 - c) Kaizala
 - d) All of the above

- 7) Which of these is not a tool for educational assessment?
- a) Hot Potato
 - b) Audacity
 - c) Rogo
 - d) eXeLearning
- 8) Which of these is MHRD initiative for creation of educational resources pool?
- a) I-share
 - b) Saransh
 - c) Shala Darpan
 - d) GIS mapping

13.7 CREATING ONLINE COMMUNITY OF PARENTS, TEACHERS AND STUDENTS FOR EFFECTIVE MANAGEMENT

It is often rightly expressed that the interaction between parents and teachers can together bring in all round development of a child. Therefore, communication between these two pillars of student development is very important. Therefore, sharing school activities with parents not only generates awareness and understanding among parents of the process and stages of development of their children but also they feel more connected to the growth and development of their children. This also makes them take an active role in the learning and development of their children.

Thus this communication and interaction between teachers and schools, and among parents is essential for building trusting relationships between two pillars of child's growth and development. This cultivates parental involvement in schools which has a positive impact on optimum, all round development of children.. The synergy between the two has important impact on their future.

This communication between teachers and parents has been there since long, but was intermittent through monthly or fortnightly Parent-Teacher Meetings (PTMs). This used to be one time interaction between parents and teachers and a continuous flow was missing.

With the advent of ICT, the scenario has changed a lot. There is a continuous interaction between the parents and teachers over various means of ICT. This has improved parental interest and involvement in schools' activities. Schools are investing more and more time, money and energy in the use of technological means of communication. Mobile, computer, internet have penetrated our lives and thus their uses are helping us in better communication amongst us. The home and the school are using more ICT devices. Similarly both teachers and parents are using and being more apt at using the electronic communication devices. The rise of social media, and mobile apps has made contact and communication almost instantaneous. Thus, ICT has helped in building and strengthening the home-school partnerships, which have helped in improving

the educational activities in schools besides increasing the satisfaction of parents and the community with schooling of their children.

In fact all agree that parents' involvement in their children's education is a key factor in their children's all round development. Though there exists a wide range of parental participation -from low or no attention to too much attention, a teacher should strike a balance between ranges of parental participation so that students are encouraged to learn at all places, be it school or the home.

The point of communication between the parents and the schools could be many. It could be physical face to face interaction or through letter, or other means about which we will learn a little later. Let us first try to understand the zone/sphere of communication between the parents and the teachers or the schools.

- Parents are expected to provide safe , healthy learning environment for the children to further their learning they acquired at school. This reinforces the concepts learnt at school and the children learn more efficiently. Schools conduct counseling sessions, workshops to make parents aware of the need to extend healthy learning environment at home as well. Further schools are also to find ways to encourage parents' involvement in children's assignments and homework.
- The school calendar has to be communicated to parents periodically , enabling them to know the activities and programs at school so that they can keep track of the children's progress a home.
- Parents are encouraged to take part, children's various school activities like career talk, betterment of the school 's effort to foster holistic development of children.
- There is also provision of parents' involvement in decision making, and in governance of school.

ICT plays a vital role in communicating and collaborating among schools, parents and the community. It has a whole range of tools to accomplish this role effectively. You certainly know about some of the tools which students, teachers, and parents frequently use these days to communicate and collaborate among them. Let us discuss some of these here.

SMS and Instant Messaging: Schools these days use SMS to pass information to parents about the attendance status of their wards. This enables the parents to know whether the child is missing the school and/or is playing truant. SMSs can be sent collectively to all parents if a common message is to be sent to all parents, otherwise individual SMSs can be sent as per the need and the context.

Now-a- days, instant messaging service like 'WhatsApp' is increasingly gaining popularity among teachers, students, and parents. Its character of simplicity and synchronous communication makes it easy for sending information to parents. In fact, WhatsApp group has already become a collective community platform for all to share information or discuss any issue.

Website or Blog: At present it is mandatory for all CBSE schools to have and maintain their own websites. Essential information of the school such as: contact information, objectives, infrastructure, school rules, time table, staff lists etc.

are clearly shown on the school website. The website should also show the monthly and yearly calendar with useful information about school trips, parent teacher meetings, get together evenings, and a map with pictures of activities with learners and teachers, etc.

Besides creating their own websites, some schools use free blogging services from Google and Wordpress to create Blogs which regularly disseminate important information to parents, students and public in general.

E-mail Services: E-mail has really revolutionized the way letters are sent and received. It has reduced the time considerably. Schools create a database of e-mail ids of parents and send regular updates, and information. This is especially useful for those parents who do not visit website or blogs regularly. Class teachers can collect the e-mail addresses at the time of admissions and keep on updating and sharing the data with others on a common database.

Some schools have their e-Newsletter sent to all parents. This has a twofold effect. one-the students involved in preparation of NEWSLETTER learn the skills of collecting, screening, editing, composing, writing, etc, and secondly, the parents are kept informed of what is happening in the school.

E-mails can also be used by teachers whenever they need to communicate with students and/or parents. This may be used both for good news as well as problems faced by children.

The advantage with e-mail is that it can be integrated in LMS and the child's contribution to and reflection on learning through chats, discussion forums can be mailed to parents as well.

Learning Management Systems (LMS) and Virtual Learning Environments (VLEs):

LMS, as the name suggests, is a system which manages the content and the teaching-learning activities organized online. LMSs have own inbuilt communication modules to interact with teachers and learners, which in turn can be monitored by parents at home. MOODLE is one of the popular open source LMS. You can easily explore the features of MOODLE from its website at www.moodle.org. Many schools are using LMS for keeping the parents updated about the teaching-learning processes in school. Schools use MOODLE to inform parents about teaching-learning happening in their wards' classes.

A VLE is a software system designed to create online learning environment. This supports teaching and learning in an educational setting. It needs good Internet connection to support online classes. Online classes are not generally organized by schools but other features like assessment, discussion forums, and assignments are done through the VLE. Learning analytics and the tracking tools help teachers to provide learners help at the right time.

Social Networks. Schools also use social media like Facebook, Twitter or Instagram to communicate with parents. Since children use these sites, parents get to see and keep track of the sites children find pleasure in . Facebook is a social networking site which allows members to share information, pictures, etc. individually or in group pages. The privacy settings can be adjusted to make it open to public or keep it private. Thus, it is possible to make groups class-

wise, theme-wise on Facebook and share information with each other. It is user friendly site and many parents already have a Facebook account. An interesting website to teach parents to use Facebook is <http://facebookforparents.org/>.

Media Sharing: There are a number of sites, which may be used for sharing media with each other. **YouTube** is the most common and widely used video sharing site. . Schools can explore its use to communicate with parents by sharing videos on different awareness programmes, videos related to child rearing practices, soft skills, etc. **Podcast** is another important media which can be listened to while doing daily routine activities. School related audio programmes, motivational and informational talks may be shared through podcasts. Many podcasting sites are available on the Internet and they may be explored. Similarly, slide presentation by teachers, management as well as parents may be shared through slide sharing sites like **Slidehare**. Images, which could be school related programmes, proceedings of new events, etc. may be shared on **wikimedia, flickr** or other picture sharing sites.

Online Groups and Forums: Online groups or forums are very important way of communicating and building community of like-minded people. In the context of school, parents, teachers, students can form online groups. Communicating with community members and parents are made easy using forum and e-mail groups like Google groups and Yahoo groups. Schools can create specific group of parents using Google or Yahoo services to communicate with each other and among parents. It is also possible to share files among the group members.

Thus, the above ICT tools can be used for creating a community which will facilitate learning in schools, homes and the community

Check Your Progress

- 9) MOODLE is a
 - a) Online survey tool
 - b) Open Source Learner Management System
 - c) Budgeting software
 - d) security device
- 10) VLE stands for
 - a) Value Loaded Environment
 - b) Virtual Learning Exercise
 - c) Value Learning Environment
 - d) Virtual Learning Environment
- 11) Which of these is not a social media tool?
 - a) WhatsApp
 - b) Facebook
 - c) FETA
 - d) Instagram

13.8 LET US SUM UP

ICT plays a vital role in improving the functional effectiveness of educational system i.e. school management. Management involves five basic functions: planning, organizing, coordinating, commanding, and controlling. It can be applied across the area and discipline. Educational Management needs managers with multi-skill sets. Broadly, ICT can be used for three major areas of educational management : Learner related like admissions; Teacher related like using it for teaching-learning activities ; and School Functioning like recruitment and work allotment. School management involves many processes like planning, budgeting, accounting, preparation of timetable, collection of student fees, staff management, resource management, communication with parents and community. There are many school management software like FeKara; TS School; Fedena; SchoolTool; Open Admin for Schools, which help in organizing information and making its retrieval efficient. Government of India has taken an initiative- Shala Darpan which is school Management software towards e-Governance. Enterprise Resource Planning (ERP) brings in efficiency in managing any system; it is very useful for school management. It has many advantages like being cost effective; better organization of data; security of data; automation of basic administrative processes; management friendly; supports pedagogy. In fact, school record keeping is all about information collection, storage, retrieval, use, transmission, manipulation and dissemination for the purpose of enriching communication, decision-making and problem solving ability in the school system. Using ICT in keeping school records helps to facilitate and enhance the administration of the school towards achieving the goals. Scheduling software like Google Calendar can schedule meetings and events with co-workers, just as old calendar application. Students' portfolios are used for self assessment as well as term assessment. Many ICT tools are available to design online assessment. It is also useful in financial management like for budgeting, accounting. ICT tools like email, social media are being used to create online community of parents and teachers.

13.9 SUGGESTED READINGS AND REFERENCES

- Geoffrey Crisp (2011). *Teacher's Handbook on e-Assessment*. Australian Learning and Teaching Council Ltd, an initiative of the Australian Government retrieved from http://transformingassessment.com/sites/default/files/files/Handbook_for_teachers.pdf
- Redecker Christine (2013). *The Use of ICT for the Assessment of Key Competences*. Luxembourg: Publications Office of the European Union retrieved from https://www.academia.edu/6470937/The_Use_of_ICT_for_the_Assessment_of_Key_Competences
- Open Admin for Schools retrieved from <https://www.schoolforge.net/education-software-download/open-admin-schools>

13.10 ANSWERS TO CHECK YOUR PROGRESS

- 1) i) False.
ii) True.

**Support Systems, Legal and
Ethical Issues**

- iii) False
- iv) True
- 2) Cumulative Record,
- 3) Name of the article; Quantity; Date of purchase; Name of Supplier; Purchase order details; Signature of Authority
- 4) MS Access; MySQL.
 - 1) D.
 - 2) A.
 - 3) B.
 - 4) A.
 - 5) B
 - 6) D
 - 7) C

