semester 2

Computer Literacy

COURSE GUIDE

Associate Degree in Education/
B.Ed. (Hons) Elementary

2012

Higher Education Commission

This product has been made possible by the support of the American People through the United States Agency for International Development (USAID). The contents of this report are the sole responsibility of the authors, and do not necessarily reflect the views of USAID or the United States Government.

Technical Support: Education Development Center (EDC); Teachers College, Columbia University

Higher Education Commission

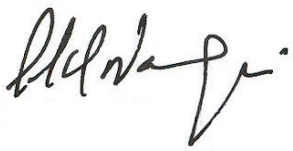
Foreword

Teacher education in Pakistan is leaping into the future. This updated Scheme of Studies is the latest milestone in a journey that began in earnest in 2006 with the development of a National Curriculum, which was later augmented by the 2008 National Professional Standards for Teachers in Pakistan and the 2010 Curriculum of Education Scheme of Studies. With these foundations in place, the Higher Education Commission (HEC) and the USAID Teacher Education Project engaged faculty across the nation to develop detailed syllabi and course guides for the four-year B.Ed. (Hons) Elementary and two-year Associate Degree in Education (ADE).

The syllabi and course guides have been reviewed by the National Curriculum Review Committee (NCRC) and the syllabi are approved as the updated Scheme of Studies for the ADE and B.Ed. (Hons) Elementary programmes.

As an educator, I am especially inspired by the creativity and engagement of this updated Scheme of Studies. It offers the potential for a seismic change in how we educate our teachers and ultimately our country's youngsters. Colleges and universities that use programmes like these provide their students with the universally valuable tools of critical thinking, hands-on learning, and collaborative study.

I am grateful to all who have contributed to this exciting process; in particular the faculty and staff from universities, colleges, and provincial institutions who gave freely of their time and expertise for the purpose of preparing teachers with the knowledge, skills, and dispositions required for nurturing students in elementary grades. Their contributions to improving the quality of basic education in Pakistan are incalculable. I would also like to thank the distinguished NCRC members, who helped further enrich the curricula by their recommendations. The generous support received from the United States Agency for International Development (USAID) enabled HEC to draw on technical assistance and subject-matter expertise of the scholars at Education Development Center, Inc., and Teachers College, Columbia University. Together, this partnership has produced a vitally important resource for Pakistan.



PROF. DR. SOHAIL NAQVI,
Executive Director,
Higher Education Commission,
Islamabad

How this course guide was developed

As part of nation-wide reforms to improve the quality of teacher education, the Higher Education Commission (HEC) with technical assistance from the USAID Teacher Education Project engaged faculty across the nation to develop detailed syllabi and course guides for the four-year B.Ed. (Hons) Elementary and two-year Associate Degree in Education (ADE).

The process of designing the syllabi and course guides began with a curriculum design workshop (one workshop for each subject) with faculty from universities and colleges and officials from provincial teacher education apex institutions. With guidance from national and international subject experts, they reviewed the HEC scheme of studies, organized course content across the semester, developed detailed unit descriptions and prepared the course syllabi. Although the course syllabi are designed primarily for Student Teachers, they are useful resource for teacher educators too.

In addition, participants in the workshops developed elements of a course guide. The course guide is designed for faculty teaching the B.Ed. (Hons) Elementary and the ADE. It provides suggestions for how to teach the content of each course and identifies potential resource materials. In designing both the syllabi and the course guides, faculty and subject experts were guided by the National Professional Standards for Teachers in Pakistan 2009 and the National Curriculum 2006. The subject experts for each course completed the initial drafts of syllabi and course guides. Faculty and Student Teachers started using drafts of syllabi and course guides and they provided their feedback and suggestions for improvement. Final drafts were reviewed and approved by the National Curriculum Review Committee (NCRC).

The following faculty were involved in designing this course guide: Abdul Wasey, PITE Balochistan; Qazi Mubasher Hussain, GCET Sharqpur, Sheikhupura; Shagufta Shehzadi, GCE (F), Gilgit; Sajida Noreen, University of Balochistan, Quetta; Mr. Shafiq-ur-Rehman, University of the Punjab, Lahore; Mr. Muhammad Shahzad Mughal, University of the Punjab, Lahore; Dr. Muhammad Ajmal, Allama Iqbal Open University, Islamabad; Ms. Safia Khatoon, GECE (W)Hyderabad; Mr. Masood Anwar, GCET Faisalabad; Shah Faisal, RITE(M/F) Chitral; Mr. Mohammad Qasim Khan, Allama Iqbal Open University, Islamabad; Dr. Mubashrah Jamil, Bahauddin Zakariya University, Multan.

Subject expert guiding course design: Sarwat Mahmood Alam, Education Development Center (EDC)

Date of NCRC review: 3 March 2012

NCRC Reviewers: Dr. Fauzia Khurshid, NUML; Dr. Saeed Khan, Hazara University.

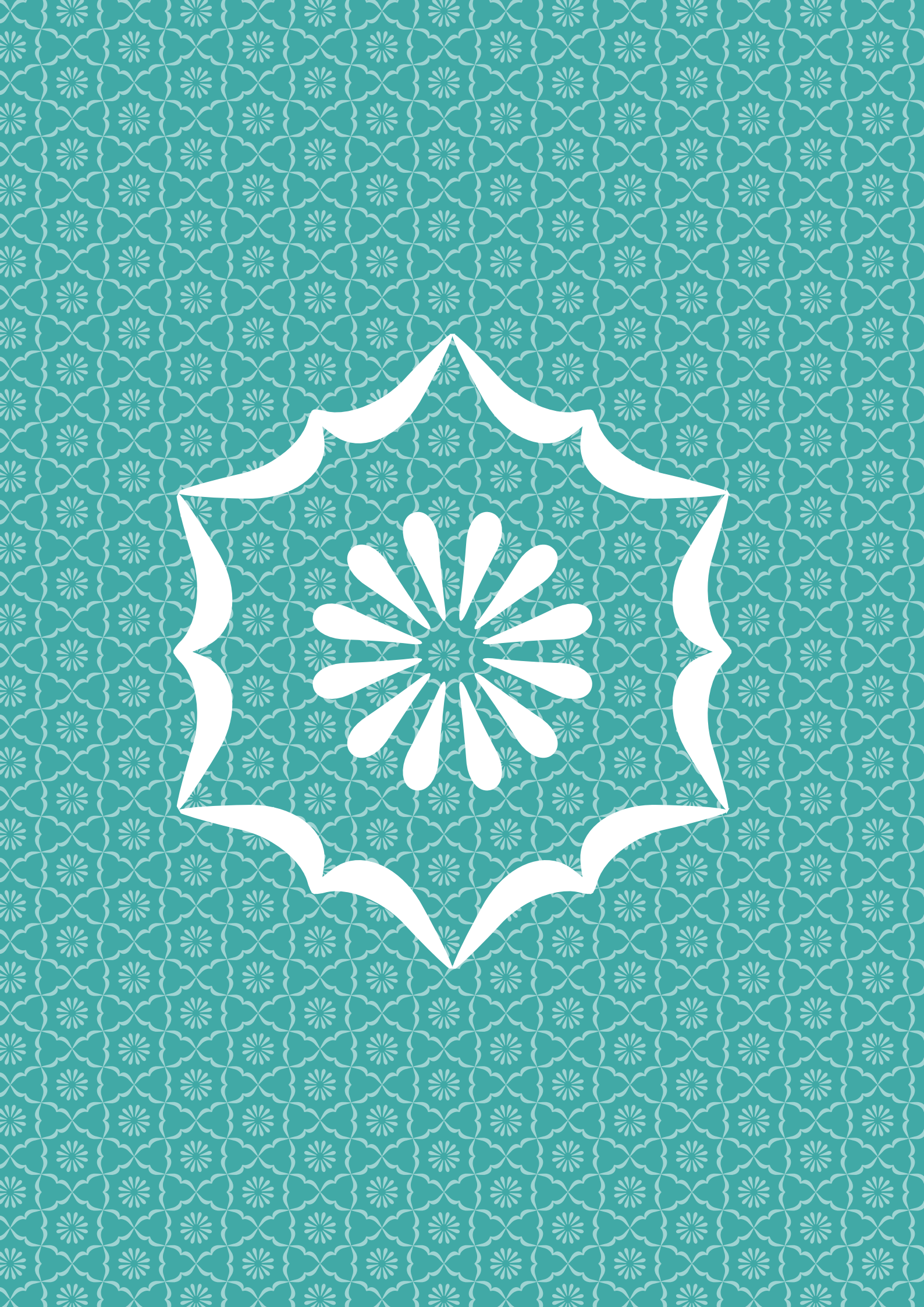


Table of Contents

Syllabus.....08

UNIT 1 Introduction to computers.....18

UNIT 2 Learning computer basics and Internet.....28

UNIT 3 Using productivity applications (word processing).....31

UNIT 4 Using productivity applications (Microsoft Excel spreadsheets).....38

UNIT 5 Using productivity applications (multimedia and Microsoft PowerPoint).....41

UNIT 6 Making connections.....45

UNIT 7 Using multimedia devices and resources.....47

UNIT 8 Use of computers in daily life.....49

Faculty Resources.....51

Student Handout: Basic computer skills – assessment checklist

Student Reading for Unit 1: Basic computer terms in simple language

Student Reading: Most frequently used computer applications

Syllabus

COMPUTER LITERACY

COMPUTER LITERACY

Year/semester
Year 1, semester 2

Duration (hours)
16 weeks/48 hours (excluding out-of-class laboratory time)

Credit value
3 credits

Prerequisites
F.A./F.Sc.

Course description

This course will prepare teachers to understand, use, and apply technologies (computers, digital cameras, mobile phones) in effective, efficient, and ethical ways. Advanced technologies are more pervasive today than they have ever been, and their uses are expanding continually. Information and Communications Technology (ICT) is significantly enhancing and altering human activity and enabling us to live, work, and think in ways that most of us never thought possible. Prospective teachers will actively explore the fundamental concepts, knowledge, skills, and attitudes for applying technology in educational settings. They will also learn to develop skills like collaboration, higher-order thinking, problem solving, and self-direction through effective use of technology tools and resources, thus enabling them to be lifelong learners in the twenty-first century.

Course outcomes

Student Teachers will:

- use computer technology as a tool for communication and collaboration
- use computers for problem solving
- create productivity materials related to teaching profession (lesson plans, result sheets, etc.)
- use computer technology for personal and professional growth
- use computer technology for research and generating new knowledge
- explore new technologies/knowledge for career growth as lifelong learners
- develop confidence and an attitude for the use of computers.

Learning and teaching approaches

This is a course about developing the skills required to use a computer, and it is expected that all of the sessions be implemented practically in the computer lab. The course is based on an interactive exploration approach using a lecture-demonstration method with various teaching techniques, including K-W-H-L charts, brainstorming, thought-provoking questions, think pair-shares, reflections, discussions, etc. The instructional strategies recommended focus the development of knowledge, skills, and attitude.

Each planned session is 60 minutes long.

Allocate two hours of practice for Student Teachers for each hour of teacher-facilitated instruction. For a three-credit-hours course, it takes three hours of teacher-facilitated instruction with six hours of Student Teacher practice per week.

Semester outline

1 UNIT 1:		Introduction to computers (1.5 weeks/4 hours)
Week #	Topics	Sub-topics
1	**Session 1:** History and classification of computers	Introduction to computers Examples of computers: personal computers (desktops, laptops, pocket PCs/handheld computers) and mainframe computer systems Brief history of computers with timeline
	Session 2: Introduction to computers: Learning about input devices	Knowledge about and interfacing with: • Input devices (examples: mouse, keyboard, scanner, joystick, webcam, digital camera, bar-code reader, digital voice recorder, etc.): knowing the mouse and keyboard • The computer, using the mouse and keyboard: practicing to input data using a mouse (left-click, right-click, move, drag, track ball, double-click, etc.)
	Session 3: Learning about different parts (hardware) of computer and accessories	Output devices (examples: printer, speaker, projector, etc.) Storage devices (hard disk, USB flash disk, CDs/DVDs, memory card, etc.) Understanding of central processing unit (CPU) How do computers work?
2	**Session 1:** Computer software	Operating/system software introduction Application software: Usage and types (word processing, spreadsheets, multimedia, etc.)

2 UNIT 2:		Learning computer basics and Internet (3.5 weeks/11 hours)
Week #	Topics	Sub-topics
2 (cont.)	**Session 2:** Interfacing with computer	Hands-on activities regarding user window (minimizing, maximizing, and closing a window; menu; status and other bars; etc.) Working with the operating system • Start/shut down (menu, purpose, etc.) • User window (minimizing, maximizing, and closing a window; menu; status and other bars; etc.) • Basic concepts of desktop, icons, shortcuts, etc.
	Session 3: Interfacing with computer (cont.)	Working with the operating system (cont.) • Control panel • Using 'Help' • Selecting a printer, changing a default printer, checking the status of a printer
3	**Session 1:** Interfacing with computer (cont.)	Concept of files and folders (types of files and extensions) File and folder properties: renaming a folder, etc. (practicing to input data using a keyboard)
	Session 2: Interfacing with computer (cont.)	Types of storage devices Practically knowing and accessing storage devices/drives
	Session 3: Interfacing with computer (cont.)	Data transfer between different storage devices (example: to/from USB flash disk to hard disk etc.)

UNIT 2:		Learning computer basics and Internet (3.5 weeks/11 hours)
4	**Session 1:** Internet basics	Introduction to the Internet and the World Wide Web (www) Internet-browsing applications (examples: Internet Explorer, Mozilla Firefox, Apple Safari, etc.) Web addresses and links
	Session 2: Internet basics (cont.)	Interfacing with the Internet-browser window (browser menu bar, buttons, scrolling, clicking on links, etc.) Search engines
	Session 3: Internet basics (cont.	Using specialized websites (see reference Web links) Searching for information (search tips etc.)
5	**Session 1:** Introduction to different types of networks (LAN/WAN, wireless)	Brief introduction to: • Local area networks (LAN), sharing on a LAN, wide area networks (WAN), wireless networks • Sharing on networks and network-related security issues • Firewalls
	Session 2: Security (identity and virus protection)	Security (identity and virus protection) • Protection against virus and spam emails • Defining 'hacking' and protecting against it
	Session 3: Troubleshooting, software installation, and protection	Software installation (example: installing an electronic dictionary) Utilities • What is file compression, and why is it needed? • File-compression applications (WinZip, other programs) • Learning to compress files and folders using Windows default options (zip, rar)

3 UNIT 3:		Using productivity applications (word processing) Microsoft Word, OpenOffice.org Writer (2 weeks/6 hours)
Week #	Topics	Sub-topics
6 & 7	**(6 sessions)** Using productivity applications (word processing) Microsoft Word, OpenOffice.org Writer	General introduction to application window Creating, saving, and opening documents Formatting and editing pages, text, and paragraphs Adding pictures to pages (clip art and from file) Working with tables, charts, and graphs Working with diagrams (using the 'draw' feature) Print preferences, printer properties, and printing a document Using preset and advance features Using word processing to create classroom-instruction documents (diagrams, lesson plans, worksheets, flash cards, brochures, newsletters) and motivation tools (certificates)

4 UNIT 4:		Using productivity applications (spreadsheets) Microsoft Excel, OpenOffice.org Calc (2 weeks/6 hours)
Week #	Topics	Sub-topics
8 & 9	**(6 sessions)** Using productivity applications (spreadsheets) Microsoft Excel, OpenOffice.org Calc	General introduction to spreadsheets interface Creating, saving, and opening spreadsheets Using worksheets (renaming and adding worksheets) Adding and working with information (formatting cells, adding comments, inserting hyperlinks) Changing the look of information with spreadsheets (cell alignment, changing font face and size, adding background colour to cells and rows, inserting picture) Doing mathematics (formulas: addition, subtraction, average, logic formula, etc.) Making charts (formatting, i.e. background, legend, colour of bars, creating pictograph) Including print properties Using spreadsheets to create classroom-management documents (seating charts, electronic attendance registers, result sheets, student academic-performance graphs, bio data)

5 UNIT 5:		Using productivity application (multimedia) Microsoft PowerPoint, OpenOffice.org Impress
Week #	Topics	Sub-topics
10 & 11	**(6 sessions)** Using productivity applications (spreadsheets) Microsoft PowerPoint, OpenOffice.org Impress	General introduction to multimedia application Creating, saving, and opening presentations Viewing and working with slides Building presentations (adding, moving/sorting, and duplicating slides) Making slides look good (applying templates and changing colour schemes, slide layout, and background) Adding pictures and artistic effects (inserting and compressing pictures, applying borders to pictures and other objects, adding 3D effects) Adding sounds, movies, and links Adding animations and special effects (applying slide transitions, adding and customizing animations, adding action buttons, turning off animations) Setting up and playing presentations (printing presentations, setting time) Using multimedia to create presentations (school profiles, lesson presentations, action plans, assignment presentations, etc.)

6 UNIT 6:		Making connections (3 weeks/9 hours)
Week #	Topics	Sub-topics
12 & 13	**(3 sessions)** Searching and saving Web resources (images, audio, videos)	Searching multimedia resources Uploading and downloading documents and other files (pictures, audio, etc.) Saving information from web pages Interfacing with online multimedia resources (example: videos on www.youtube.com about learning to use a computer)
	(3 sessions) Communicating through the Internet	Creating and using email to communicate and collaborate • Email management (creating, sorting, forwarding, searching, flagging, deleting) • Attaching documents (files and folders) • Using Web 2.0 and chat/talk applications (Skype, Google Talk, etc.)

	(3 sessions) Online collaboration Applications	Introduction to online collaboration Working with an online collaboration application (application: Google Docs) Creating, importing, and editing a file (documents, spreadsheets, and presentations) Sharing and accessing online files

7 UNIT 7:		**Using multimedia devices and resources (1 week/3 hours)**
Week #	Topics	Sub-topics
15	**(3 sessions)** Using multimedia digital Devices with a computer	Introduction to and examples of digital devices (cameras, mobile phones, digital voice recorders, etc.) Using a digital camera and other technologies (i.e. mobile phones to download images and videos) Transferring images and videos to a computer from mobile devices (mobile phones, cameras) Using multimedia applications (examples: RealPlayer, Windows Media Player, QuickTime Player, etc.) to play educational audio and video clips

8 UNIT 8:		**Use of computer in daily life (1 week/3 hours)**
Week #	Topics	Sub-topics
16	**Session 1:** Working in an information society	Uses of the computer • In the workplace • In the community • For communication • For education, research, and literacy • For entertainment
	Session 2: Computer ethics	Code of ethics Computer crime Copyright laws, fair-use guidelines, and plagiarism
	Session 3: Computer-assisted instruction (CAI)	Computer as a teacher Use of computer-assisted instruction Online education (example: Virtual University of Pakistan)

Course Grading Policy

The ability to use a computer can only really be judged by having someone complete a task using a computer. A written exam is of little value in assessing computer skills.

Your instructor will give you a series of assignments and tasks to perform throughout the course, with several at the midpoint and end of the course. These will be graded. Your instructor should tell you in advance which courses will be graded.

UNIT 1

INTRODUCTION TO COMPUTERS

Unit overview:1.5 weeks/4 hours

This unit will help the learners understand the basic components of a computer, including its hardware and software; they will discover the fundamentals of an operating system and develop Internet navigation skills.

After completing this unit, Student Teachers will:

- identify different computer types and parts of the computer
- use the keyboard and mouse for inputting data
- explain the functions of input, output, and storage devices with examples
- state the types and purposes of software in a computer.

NOTE: The first two session plans are provided in detail as a guide.

Week 1, session 1: History and classification of computers

This session includes:

- Introduction to computers
- Examples of computers: personal computers (desktops, laptops, pocket PCs/ handheld computers) and mainframe computer systems
- Brief history of computers with timeline

Learning outcomes

After completing this unit, Student Teachers will:

- understand the term 'computer literacy' and give examples of its practical applications in the everyday life of a twenty-first-century teacher and learner
- identify different types of computers and their usage
- identify main hardware parts of a computer and compare these parts for different types of computers.

Materials

Pictures of different types of computers (or real computers, if available): desktops, laptops, tablet PCs, pocket PCs, personal digital assistants [PDAs], palmtops, and other handheld computers

Week 1, session 1 lesson

Introduction to the course (10 minutes)

Give a brief overview of the importance of computer literacy for teachers, especially for developing twenty-first-century learning and communication skills.
Provide a brief overview of the course using the syllabus.

Introduction to the topic (5 minutes)

Mapping previous knowledge: ask about different types of computers that the Student Teachers a) know about, b) have seen, or c) have worked on. Next prompt: what is a computer? Introduce the session topic.

Presentation/lecture (10 minutes)

Explain and discuss the different types of computers with Student Teachers (the content of the discussion will depend on what they know already). Show them real computers (if available) or pictures of examples (desktops, laptops, tablet PCs, pocket PCs, personal digital assistants (PDAs), palmtops, and other handheld computers) and explain the general usage of each.

Sharing in pairs or triads (5 minutes)

Ask Student Teachers to discuss with each other their personal experiences with and knowledge about these types (examples) of computers.

Presentation/lecture (10 minutes)

Explain the type of computer known as a 'mainframe' and the purpose of this type of system.

Briefly talk about the history of computers, with specific reference to personal computers. (There's an assignment on this in the second session, so don't be too detailed about it. It is recommended to let Student Teachers explore it themselves.)

Review of syllabus (15 minutes)

Hand out copies of the syllabus. Give Student Teachers an opportunity to look it over. Next, highlight the various sections. Point out that the approach to teaching and learning that will be used in this course may be very different from their previous educational experiences.

Five tips for the course (5 minutes)

Next, share with students the five tips to successfully complete the course:

1) Experiment and 'play' with computers. It is important and will increase your comfort level. Learn to play with computers and not to fear that you'll break the computer.
2) There's no shame in making mistakes. Mistakes are positive learning experiences; make lots of them!
3) You don't have to learn it all at one time. The most important skill to learn is 'how to learn'. You don't need to cram the information. Keep in mind: the hardest part of learning to use computers and the Internet is getting started! Once you get started, you'll find your way.

4) Work in pairs, especially to help others or to learn from them. Computers take patience and perseverance!

5) The biggest mistake of all is to avoid a situation in which you might make a mistake!

Session 1 activities

Activity 1: Small-group work

Ask Student Teachers to collect pictures of different types of computers and develop a picture poster using the timeline technique. Also ask them to explore other resources (magazines/newspapers) and list the usage of each type of computer briefly. Ask them to display these posters before the next session and share with each other.

Activity 2: Device sharing

Ask Student Teachers/colleagues if they can bring any handheld computer devices or accessories to the next class to share with their peers.

Activity 3: Resources/timeline technique

Ask Student Teachers to explore/refer to the software DVD Story of Pakistan for the timeline technique. Orient them if needed.

Week 1, session 2: Interfacing with input and output devices

This session includes knowledge about and interfacing with:

- input devices (examples: mouse, keyboard, scanner, joystick, webcam, digital camera, bar-code reader, digital voice recorder, etc.): knowing the mouse and keyboard
- the computer, using the mouse and keyboard: practicing to input data using a mouse (left-click, right-click, move, drag, track ball, double-click, etc.).

Learning outcomes

After completing this unit, Student Teachers will:

- identify main hardware parts of a computer and their function
- compare these parts for different types of computers (e.g. touchpad on a laptop etc.)
- understand the terms 'input' and 'output'
- know and interface with mouse and keyboard.

Materials

Have a handout ready of a computer (desktop) with the picture labelled for different parts.

Pictures of input and output devices (or real devices, as possible). (Examples: mouse; keyboard; scanner; joystick; webcam; digital camera; bar-code reader; digital voice recorder; handheld devices, such as a mobile phone, BlackBerry, or Pocket PC as an example of input and output hardware options, etc.). You might have to download some pictures and other materials from the Internet in advance to prepare for the session.

Week 1 session 2 lesson

Introduction (10 minutes)

Announce the topic. Distribute the labelled handout amongst the groups. Ask Student Teachers to physically locate different parts of a real computer on their workstation and name them (CPU, monitor, keyboard, and mouse).

Demonstration and lecture (5 minutes)

Show them the parts of a *real* computer and explain the function of each.

Lecture/presentation (15 minutes)

Briefly talk about input and its types (data, programs, commands, user response). Tell Student Teachers that they'll learn about each of these input types later in detail.

Briefly talk about output and its types (text documents; graphics, such as charts, graphs, and pictures; multimedia, such as the combination of text, graphics, video, and audio).

Share with Student Teachers different pictures of the input devices (or real devices, as possible). (Examples: mouse, keyboard, scanner, joystick, webcam, digital camera, bar-code reader, digital voice recorder, track ball on a BlackBerry phone, touchpad screens on mobile phones, etc.).

Session 2 activities

Group-share (5 minutes)

Ask Student Teachers about their experiences of seeing or using these input and output devices. Ask them to locate the input devices that are available in their computer lab.

Presentation/demonstration (15 minutes)

Briefly talk about different parts of a real keyboard (alphabetical keypad, function keys, numeric keypad, cursor keys, shift and control keys, enter key and space bar, etc.).

Briefly talk about different parts of a computer mouse. Select different icons on the desktop and demonstrate inputting data using a mouse (left-click, right-click, move, drag, double-click, etc.).

Talk about connectors: input and output ports (serial, parallel, USB, and examples of devices that connect with each).

Student Teacher practice (10 minutes)

Ask Student Teachers to:

- detach and attach different input/output devices to their computers
- practice inputting data using a mouse (left-click, right-click, move, drag, double-click, etc.)
- practice on the application Typing Tutor for keyboarding skills and typing practice.

Post-session practice

As above (specifically, mouse movements and knowing the keyboard).

Practice on the application Typing Tutor. Instructors are strongly advised to support Student Teachers for these initial practice sessions.

Week 1, session 3: How do computers work? Output devices, storage devices, and CPU

This session includes:

- knowledge about and interfacing with: output devices (examples: monitor, printer, speaker, projector, LCD camera screen, etc.) and storage devices (hard disk, USB flash disk, CDs/DVDs, digital camera/memory card, etc.)
- general understanding of central processing unit (CPU)
- how computers work (in simple layman terms).

Learning outcomes

As a result of this session, Student Teachers will be able to:

- identify and describe the most common output and data-storage devices and their function; compare these devices with respect to their function and features (advantages and limitations of each device type)
- understand the term 'data storage'
- know and interface with output and storage devices listed above
- generally understand how computers work.

Student Teachers will also develop the following skills:

- ability to make informed decisions regarding personal-computer components as a user (specifically about input, output, and storage devices)
- ability to interface with the computer for using the input, output, and storage devices.

Materials and equipment for the session

You will need to prepare:

A 'Lesson vocabulary summary' handout with the names of key terms/devices mentioned, with their type and function in brief. An example is provided at the end of the course guide.

A simple PowerPoint presentation about 'How computers work' and a handout of the presentation.

A computer with multimedia projector (as available).

Different output and storage devices. Note: Use real devices as much as possible. Use pictures only when real devices are not available.

Week 1 session 3 lesson

Lecture/presentation (20 minutes)

Commence the lesson by presenting a PowerPoint presentation that addresses the output and storage-data devices. You will present realistic output and storage devices throughout the lesson.

Next, instruct Student Teachers to observe your presentation. You will focus this part of the session on the devices used to output and store data and how to connect those devices to the computer. You will address different types of media used to store data, as well as how to care for removable storage devices.

Next, address and discuss the purposes and sophistication of output and storage devices, relating the choice of device to the particular task to be completed. Introduce Student Teachers to voice-recognition devices, scanners, video input, and digital cameras (memory cards and LCD screens).

In a layperson's terms, briefly describe the central processing unit and how computers work. Distribute the 'How computers work' handout to Student Teachers. Student Teachers will get an opportunity to study this in detail in later sessions.

In addition to presenting the PowerPoint presentation, arrange for Student Teachers to look at actual output and storage-device equipment.

Session 3 activities

Group-share (5 minutes)

Ask Student Teachers about their experiences of seeing or using these output and storage devices. Ask them to locate the devices that are available in their computer lab.

Student Teacher interface/practice (20 minutes)

Provide Student Teachers with real output and storage devices.

Ask Student Teachers to analyse each device and appreciate all of the different parts of each device. At the same time, the 'Say, see, and do cycles' teaching methodology will be employed. Ask Student Teachers to plug in the USB flash disk to the USB connector (port) on the computer and note in their journals what happens next on the monitor screen.

NOTE TO INSTRUCTOR: You will be helping Student Teachers while they do this task.

Assessment (10 minutes)

Review the recent hardware, input/output, and storage-device lesson with Student Teachers.

Distribute the 'Lesson vocabulary summary' handout to Student Teachers.

You may also give a quick quiz based on the session (5 minutes). Ask Student Teachers to submit their quizzes for assessment.

Post-session assignment (briefly instruct about the assignment in 5 minutes)

Provide Student Teachers with a comparison sheet template. Ask them to use their notes and reference books and other materials in the library or do a 'shop search' to find out about features of different storage devices and fill in information on the 'Comparison sheet'.

Computer storage devices: Comparison sheet

Item	Size	Storage capacity*	Mobility (fixed or moveable)	Usage (Describe and give examples)	Is it rewriteable? (Can it be used again and again?)
Hard disk					
USB flash disk					
CD-R (write once, read many)					
CD-RW (rewriteable)					
DVDS					
Memory cards					

NOTE: When discussing storage, use simple terms such as 'bulk storage', 'storing small files', etc. At this stage, do not get into storage units (GB and MB).

Week 2 session 1: Computer software

Learning outcomes

After completing this unit, Student Teachers will:

- understand the purpose of software in a computer
- list main software applications and their usage
- explore different application windows (application icons, opening the application, main window).

Materials

Prepare a handout with descriptions of different applications, each on a separate page. Make sure the icon for the application and a user window is there. (See 'Most frequently used computer applications' handout as a reference.)

Week 2 session 1 lesson

Introduction (10 minutes)

Ask Student Teachers about their experiences with using a computer. Ask them about the software programs they or their family members/friends usually use (if any) and the purpose of them.

Presentation (20 minutes)

Explain 'software' and different application windows, with the help of multimedia presentation

With the help of different programs/applications as examples, explain the two categories of software and their function:

1) Application software (examples: Microsoft Word, MS Paint, Windows Media Player, etc.): usage and types (word processing, spreadsheets, multimedia applications, utilities, antivirus programs, etc.)
2) System software (such as Windows XP and different versions)

Session 3 activities

Reading and practice: Jigsaw/group work (20 minutes)

Distribute the handout on software-application programs to different groups. Ask Student Teachers to read the handout for *one* application (assign it to them) and open that program on the computer and explore.

Group-share/presentation (10 minutes)

Ask the Student Teacher groups to share their application details with the other groups.

Post-session practice

Ask Student Teachers to read about other applications (handouts) and explore the application window on the computer.

UNIT 2

LEARNING COMPUTER BASICS AND INTERNET

Unit Overview: 3.5 weeks/11 hours

Week #	Topics	Sub-topics
2 (cont.)	**Session 2:** Interfacing with computer	Hands-on activities regarding user window (minimizing, maximizing, and closing a window; menu; status and other bars; etc.) Working with the operating system • Start/shut down (menu, purpose, etc.) • User window (minimizing, maximizing, and closing a window; menu; status and other bars; etc.) • Basic concepts of desktop, icons, shortcuts, etc.
	Session 3: Interfacing with computer (cont.)	Working with the operating system (cont.) • Control panel • Using 'Help' • Selecting a printer, changing a default printer, checking the status of a printer
3	**Session 1:** Interfacing with computer (cont.)	Concept of files and folders (types of files and extensions) File and folder properties: renaming a folder, etc. (practicing to input data using a keyboard)
	Session 2: Interfacing with computer (cont.)	Types of storage devices Practically knowing and accessing storage devices/drives
	Session 3: Interfacing with computer (cont.)	Data transfer between different storage devices (example: to/from USB flash disk to hard disk etc.)

Week #	Topics	Sub-topics
4	**Session 1:** Internet basics	Introduction to the Internet and the World Wide Web (www) Internet-browsing applications (examples: Internet Explorer, Mozilla Firefox, Apple Safari, etc.) Web addresses and links
	Session 2: Internet basics (cont.)	Interfacing with the Internet-browser window (browser menu bar, buttons, scrolling, clicking on links, etc.) Search engines
	Session 3: Internet basics (cont.	Using specialized websites (see reference Web links) Searching for information (search tips etc.)
5	**Session 1:** Introduction to different types of networks (LAN/WAN, wireless)	Brief introduction to: • Local area networks (LAN), sharing on a LAN, wide area networks (WAN), wireless networks • Sharing on networks and network-related security issues • Firewalls
	Session 2: Security (identity and virus protection)	Security (identity and virus protection) • Protection against virus and spam emails • Defining 'hacking' and protecting against it
	Session 3: Troubleshooting, software installation, and protection	Software installation (example: installing an electronic dictionary) Utilities • What is file compression, and why is it needed? • File-compression applications (WinZip, other programs) • Learning to compress files and folders using Windows default options (zip, rar)

UNIT 3

USING PRODUCTIVITY APPLICATIONS (WORD PROCESSING)

Unit Overview: 2 weeks/6 hours

The objective of this unit is to build learners' word-processing skills. This unit will also help the learners to identify resources for learning and enhancing their word-processing skills, specifically for application in their career as a teacher. Some assignments covered in this unit are about developing a lesson plan, preparing a résumé, and developing other productivity tools, like assessment instruments such as quizzes. The following key topics are covered in this unit:

- general introduction to application window
- creating, saving, and opening documents
- formatting and editing pages, text, and paragraphs
- adding pictures to pages (clip art and from file)
- working with tables, charts, and graphs
- working with diagrams (using the 'draw' feature)
- print preferences, printer properties, and printing a document
- using preset and advance features
- using word processing to create classroom-instruction documents (diagrams, lesson plans, worksheets, flash cards, brochures, newsletters) and motivation tools (certificates).

Learning outcomes

Student Teachers will be able to:

- identify and describe the most common word-processing features and uses
- state the types and purpose of word-processing and editing applications, specifically with reference to education
- develop practical skills for word processing and recording text on a computer
- create a product that can be used as a tool in their teaching profession.

NOTE FOR INSTRUCTORS: Most of the material covered in this unit is based on hands-on practice using MS Word (or other word-processing application). Two weeks of time needs to be dedicated towards providing practice on computers. At the end of the two-week time, Student Teachers will produce three products that will be used to assess their skills acquired during these sessions.

Student Teachers will need a lot of encouragement in the beginning, because their typing speed is expected to be slow. Encourage them to use both hands for typing. They can be given more time to practice keyboarding skills on an application like Typing Tutor.

Materials and equipment

Sample productivity tools as a reference for practicing word-processing skills:

- Handout: lesson plan template
- Handout: sample quiz (to be produced as an assignment)

Computers for practice

Multimedia projector (if available)

Assessing prior knowledge

Connect the topic back to the 'Most commonly used computer applications' and ask the learners about the main points that were covered during that session.

Unit 3 Activities

Activity 1: Making a quiz or question paper (basic word processing features)

This may take between one and three hours, depending on the level and prior skills of Student Teachers. The out-of-class learning time can be dedicated to learn basic word-processing features, including text typing and editing.

Ask Student Teachers to select any topic of study from the National Curriculum for elementary grades and use MS Word to draft a quiz or a question paper that teachers usually prepare for examination. You can also select any one of your exam papers and practice producing a similar document that has the following word-processing features (a sample quiz is provided for Student Teachers' reference):

- Document title (bolded and background shaded)
- Page header and footer
- Page number in the footer
- Text alignment
- Bullets and numbering
- Indenting (using tab or ruler)
- Reasonable paragraph and line spacing (1.25 suggested)
- Some items can be italicized (names etc.)
- Font style: Times New Roman
- Font size: 12 for subject and body, 14 for the document title, and 10 for header and footer text and numbering

NOTE FOR INSTRUCTORS: As Student Teachers are just starting to learn the application, they should be allowed to do this assignment in small groups or in pairs.

Activity 2: Pair-share

When Student Teachers have produced at least one teaching tool or resource material:

- Ask Student Teachers about their experience of working on a word-processing application. Ask them how it was different from writing in a notebook.
- Ask them how else word processing can help them in their profession. What other tools and materials can they produce using a word-processing application?

Activity 3: Practice assignment - preparing a lesson plan

This assignment may take between one and three hours, depending on the level and prior skills of Student Teachers. The out-of-class learning time can be dedicated to practice word-processing features, including text typing and editing.

Selecting any topic of study from the National Curriculum for elementary grades, work on MS Word to draft a lesson or activity plan that you can use later for presenting the same or during teaching practice. It might be useful to share and discuss a few lesson plan templates before they start. Lesson plans generally include the following features:

- Basic formatting learnt earlier (font size, style, bolded and underlined text, etc.)
- Tables (table border and shading, as required)
- Cell border and shading
- Images (pictures etc. as required)
- Bullets and numbering
- Use of symbols
- Cell merge
- Cell alignment (centre, left, and right, as required)

NOTE: the next two assignments can be graded for student evaluation.

Activity 4: Practice assignment—creating a school/college quarterly newsletter/magazine

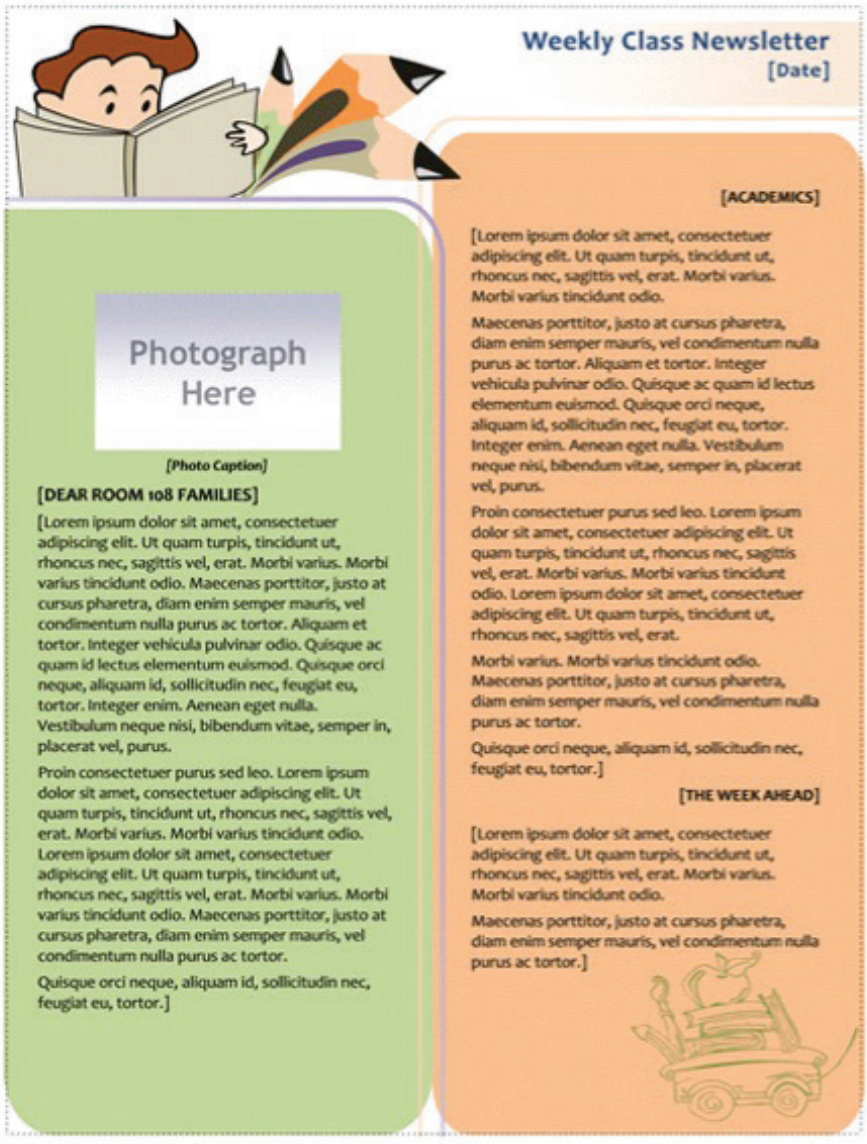
This assignment employs advanced word-processing features.

Ask Student Teachers to create a monthly/quarterly newsletter for their class or institution using MS Word. The newsletter should include the following word-processing features:

- Basic text editing and formatting
- Inserting and formatting images
- Paragraphing
- Using text boxes and text wrapping/alignment

Templates for newsletters are available on the MS Office website:

➢ http://office.microsoft.com/en-us/results.aspx?qu=school%20newsletter&ex=2&av=all.



Newsletter Example

Activity 5: Practice assignment—Drafting a résumé and covering letter for a job

This assignment employs advanced word-processing features.

This activity may take between one and three hours, depending on the level and prior skills of Student Teachers. The out-of-class learning time can be dedicated to practice word-processing features, including text typing and editing.

Ask Student Teachers to prepare their résumé and a covering letter in MS Word. The résumé needs to include main items (name; address; a passport-size photograph inserted in a text box and aligned right tightly with the text for name and address; a brief vision statement; academic qualifications; institutions attended and years, mentioned in chronological order; key professional/teaching skills, major projects/assignments done as a Student Teacher, and computer skills).

The Student Teachers will practice all word-processing skills learnt so far. Instructors can provide a hard copy of a sample covering letter and a résumé to Student Teachers that they can use as a template. These templates can also be downloaded from the Web/Internet.

Activity 6: Unit conclusion and discussion (15 to 20 minutes)

Organize a small-group discussion amongst Student Teachers in the light of the following guiding questions:

- What skills did you learn after completing this unit? What is one skill that you liked the most?
- How would learning word-processing skills contribute to a teacher's productivity?
- Which feature did you find the most difficult to work on? How did you get through this problem?

Web links and other resources

Student Teachers may consult the following resources for practicing word-processing skills:

- Student Teachers may use the 'Help' feature of MS Word if they feel stuck (demonstrate this if needed)
- Module: word processing (Intel's 'Getting Started' manual)
- Several websites offer detailed MS Word tutorials, including the Teaching & Learning Technologies Center, University of West Virginia.
  - depts.hre.wvu.edu/tltc/word_tutorial.pdf.

Sample student quiz: Living and nonliving things

Name: _____ Class and section: _____

Date: _____

Select the correct answer:

1. Which of the following is a living thing?
   a. A toy car
   b. Fire
   c. Paper
   d. An ant

2. Which of the following need air, water, and food?
   a. Plants
   b. Pencils
   c. Balloons

3. Which of the following can make their own food?
   a. Elephant
   b. Money plant
   c. Book

4. Which of the following can move on its own?
   a. Monkey
   b. School bag
   c. Washing machine

5. A toy car with a battery cell can move. It is a living thing.
   ☐ True
   ☐ False

UNIT 4

USING PRODUCTIVITY APPLICATIONS (MICROSOFT EXCEL SPREADSHEETS)

Unit Overview: 2 weeks/6 hours

The objective of this unit is to build learners' skills to work on and use spreadsheets. This unit will also help the learners to identify resources for learning and enhancing their skills, specifically for application in their career as a teacher. The following key subtopics are covered in this unit:

- General introduction to spreadsheets interface
- Creating, saving, and opening spreadsheets
- Using worksheets (renaming and adding worksheets)
- Adding and working with information (formatting cells, adding comments, inserting hyperlinks)
- Changing the look of information with spreadsheets (cell alignment, changing font face and size, adding background colour to cells and rows, inserting picture)
- Doing mathematics (formulas: addition, subtraction, average, logic formula, etc.)
- Making charts (formatting, i.e. background, legend, colour of bars, creating pictograph)
- Including print properties
- Using spreadsheets to create classroom-management documents (seating charts, electronic attendance registers, result sheets, student academic-performance graphs, bio data)

Learning outcomes

After completing this unit, Student Teachers will be able to:

- identify and describe the most common spreadsheet features and uses
- state the purpose of spreadsheet applications, specifically with reference to education
- develop practical skills for using a spreadsheet application as a teacher
- create a product that can be used as a tool in their teaching profession
- share the developed spreadsheet tools with their peers and seek feedback.

Activities

This section provides ideas for practical exercises and assignments. Assignments 2 and 3 can be graded for student evaluation.

Activity 1: Contacts directory exercise

Create a contacts directory of your immediate personal and professional contacts. The directory will store different types of information using the respective data type in a spreadsheet. The directory will include column headings (serial number, name, address, landline phone number, cell number, email address, etc.). Each row will mention the details of contacts.

Activity 2: Annual examination spreadsheet exercise

Create a spreadsheet for recording and compiling annual examination result for grade 2 of your practicum school. You may use the class attendance register to get the names of students and last year's annual examination result sheet.

The spreadsheet should include the following features:

- Basic text editing using cells
- Worksheet/spreadsheet title (bolded) that explains the information contained in the worksheet
- Row heading for different subjects, grand total marks, and percentage
- Columns with names of at least five students
- Student scores in respective cells
- Formulas used to calculate the total score for each student and percentage
- Unused worksheets deleted
- Worksheet renamed as 'Annual examination result'

Activity 3: Aggregate attendance exercise

Record total student attendance month-wise against total number of working days for a particular month. Calculate percentage of the aggregate attendance for different months. Present the date in a bar graph that shows aggregate student strength at a glance for different months of the academic year. Analyse the pattern in student attendance and take a note of the months when student attendance has been the lowest. Think of and suggest ways to improve the same for the coming months.

UNIT 5

USING PRODUCTIVITY APPLICATIONS (MULTIMEDIA AND MICROSOFT POWERPOINT)

Unit Overview

Presentations are an essential ingredient of meetings, seminars, and other academic events. Developing and delivering a presentation is a key skill that job providers look for. Student Teachers need to embrace best practices and master essential skills for using presentation applications. The objective of this unit is to build learners' skills to work on and use presentation applications. This unit will also help the learners to identify resources for learning and enhancing their skills, specifically for application in their career as a teacher. The following key subtopics are covered in this unit:

- General introduction to multimedia application
- Creating, saving, and opening presentations
- Viewing and working with slides
- Building presentations (adding, moving/sorting, and duplicating slides)
- Making slides look good (applying templates and changing colour schemes, slide layout, and background)
- Adding pictures and artistic effects (inserting and compressing pictures, applying borders to pictures and other objects, adding 3D effects)
- Adding sounds, movies, and links
- Adding animations and special effects (applying slide transitions, adding and customizing animations, adding action buttons, turning off animations)
- Setting up and playing presentations (printing presentations, setting time)
- Using multimedia to create presentations (school profiles, lesson presentations, action plans, assignment presentations, etc.)

Learning outcomes

After completing this unit, Student Teachers will be able to:

- identify and describe the most common features and uses of MS PowerPoint (or another presentation application)
- state the purpose of presentation applications, specifically with reference to education
- develop practical skills for using a presentation application as a teacher
- create a product that can be used as a tool in their teaching profession (PowerPoint presentation)
- deliver a presentation/share the developed spreadsheet tools with their peers and seek feedback.

Activities

NOTE: instructors can select any of these assignments for providing practice and evaluation of students.

Activity 1: School achievements presentation

Imagine you are a school representative and are preparing for the annual school event. Create a PowerPoint presentation that highlights the school achievements during the current academic year. Begin the presentation by providing a brief history and profile of the school. On the title slide, also include a photograph that best represents your institution.

Activity 2: Methods of teaching presentation

Prepare a presentation of the lesson plan that you designed going through the 'Methods of teaching' (or another course). Share the presentation with your peers and seek feedback before submitting it to your instructor. Also keep a note of peers' feedback because your instructor may ask some questions regarding that.

Activity 3: Learning portfolio development

Prepare a learning portfolio using the PowerPoint template provided with the course guide. A learning portfolio is a collection of evidence that demonstrates what someone has learned. A Student Teacher can make the portfolio on any topic or course or part of a course. Examples of 'evidence' to include are lesson plans, reflections, photographs of materials prepared, recordings of conversations, video clips of teaching etc.

Guidelines for an effective presentation

Provide the following guidelines to the Student Teachers for these assignments:

- Remember that PowerPoint helps to 'visualize ideas', communicate key points, and make information 'memorable'. Do not use presentations to dump data.
- The presentation should be to the point, focusing on actual purpose.
- The presentation should have a professional look, representing the purpose and institution's identity.
- The presentation should not be text-heavy. Include only required text, and maximize graphics in the presentation. Support your presentation with graphs and charts. Do not describe these charts with detailed text; rather, talk about the information presented in the charts while presenting.

- Colours and fonts should appear to be uniform throughout the presentation to avoid inconvenience.
- Use legible and common fonts; make sure the font size is large enough to be readable by all attendees of the presentation. Do not sacrifice readability for style.
- Avoid too much bulleting and indentation.
- Animation, sound, and other effects in the presentation should not be distracting.
- Remember that you want the viewers to focus on what you're presenting, not how it is presented (overuse of fonts, styles, etc.).
- Student Teachers need to practice properly before delivering a presentation in any seminars.
- Be mindful of the time, listeners' positive responses, and their ease; don't make people bored with longer-duration presentations.
- Remember these four points for an effective presentation: significance, simplicity, structure, and rehearsal.

Encourage Student Teachers to explore ideas and resources about not-so-effective uses of PowerPoint. The following link leads to an article titled Death by PowerPoint. PowerPoint tutorials can be downloaded from:

➢ http://library.med.utah.edu/ed/eduservices/handouts/PowerPoint_Web/PPT_XP_tutorial.pdf.

UNIT 6

MAKING CONNECTIONS

Unit Overview: 3 weeks/9 hours

Week #	Topics	Sub-topics
12 & 13	**(3 sessions)** Searching and saving Web resources (images, audio, videos)	Searching multimedia resources Uploading and downloading documents and other files (pictures, audio, etc.) Saving information from web pages Interfacing with online multimedia resources (example: videos on www.youtube.com about learning to use a computer)
	(3 sessions) Communicating through the Internet	Creating and using email to communicate and collaborate • Email management (creating, sorting, forwarding, searching, flagging, deleting) • Attaching documents (files and folders) • Using Web 2.0 and chat/talk applications (Skype, Google Talk, etc.)
14	**(3 sessions)** Online collaboration Applications	Introduction to online collaboration Working with an online collaboration application (application: Google Docs) Creating, importing, and editing a file (documents, spreadsheets, and presentations) Sharing and accessing online files

UNIT 7

USING MULTIMEDIA DEVICES AND RESOURCES

Unit Overview: 1 week/3 hours

Week #	Topics	Sub-topics
15	**(3 sessions)** Using multimedia digital Devices with a computer	Introduction to and examples of digital devices (cameras, mobile phones, digital voice recorders, etc.) Using a digital camera and other technologies (i.e. mobile phones to download images and videos) Transferring images and videos to a computer from mobile devices (mobile phones, cameras) Using multimedia applications (examples: RealPlayer, Windows Media Player, QuickTime Player, etc.) to play educational audio and video clips

UNIT 8

USE OF COMPUTERS IN DAILY LIFE

Unit Overview: 1 week/3 hours

Week #	Topics	Sub-topics
16	**Session 1:** Working in an information society	Uses of the computer • In the workplace • In the community • For communication • For education, research, and literacy • For entertainment
	Session 2: Computer ethics	Code of ethics Computer crime Copyright laws, fair-use guidelines, and plagiarism
	Session 3: Computer-assisted instruction (CAI)	Computer as a teacher Use of computer-assisted instruction Online education (example: Virtual University of Pakistan)

Self-assessment of basic computer skills

At the end of the course, provide the Student Teachers with the self-assessment tool 'Basic computer skills – assessment checklist' included at the end of this guide and ask them to use it to assess their computer skills. Encourage them to identify the skills that still need to be practiced.

Faculty Resources

Student Handout: Basic computer skills – assessment checklist

S

Name: _____

Date: _____

The following computer skills are applicable to Windows systems, unless otherwise noted. Being able to demonstrate proficiency with the skills listed below will provide the participant with the fundamental set of skills necessary to be successful for the aspects in the training course that utilize technology.

Windows Vista, Windows 7, and Windows XP

1) ☐ Turn on a computer
2) ☐ Turn off your computer using 'Start' … 'Shut Down'
3) ☐ How to restart a computer
4) ☐ Demonstrate how to 'log on' to Windows Vista
5) ☐ Demonstrate how to 'log off' Windows Vista
6) ☐ Demonstrate how to launch an application by 'double-clicking' the application icon on the desktop
7) ☐ Demonstrate how to 'Move and resize a window (by dragging)'
8) ☐ Demonstrate how to 'Minimize a window'
9) ☐ Demonstrate how to 'Maximize a window'
10) ☐ Demonstrate how to 'Restore a window'
11) ☐ Demonstrate how to 'Move a window or other object by 'drag and drop''
12) ☐ Manage multiple opened windows using the 'Taskbar'
13) ☐ Demonstrate how to 'Close a window'
14) ☐ Demonstrate how to 'Quit an application'
15) ☐ Demonstrate the proper method ('Safely remove hardware' method) to remove a USB flash drive from a computer (this is important to prevent unexpected damage to a USB flash drive)
16) ☐ Demonstrate how to use the Windows 'Search' feature to locate a specific file or files
17) ☐ Demonstrate how to launch and use the 'Help' feature

Mouse basics (Windows only) (two-button mouse with scroll wheel)

18) ☐ Use a mouse to point (to objects) and click (select objects and launch applications)
19) ☐ Demonstrate 'single-click' on text to place the insertion point
20) ☐ Demonstrate 'double-click' on text to select a word
21) ☐ Demonstrate 'triple-click' on text to select a paragraph
22) ☐ Demonstrate selection of lines of text using the left margin of the text document
23) ☐ Demonstrate 'right-click' of Windows mouse to display a shortcut menu

My Computer (or Windows Explorer)

24) ☐ Demonstrate 'Open and use My Computer' (or Windows Explorer): Windows
25) ☐ Explain file structure as it is used in computers (Hint: it is analogous to a 'paper' filing system)
26) ☐ Demonstrate 'Navigate/browse through a file and folder system to find a specific file'
27) ☐ Demonstrate 'Expand a folder'
28) ☐ Demonstrate 'Collapse a folder'
29) ☐ Demonstrate 'Create a new folder'
30) ☐ Demonstrate 'Delete a folder'
31) ☐ Demonstrate 'Display the contents of a folder'
32) ☐ Demonstrate 'Display the contents of a subfolder'
33) ☐ Demonstrate 'Rename a folder'
34) ☐ Demonstrate 'Select a group of folders'
35) ☐ Demonstrate 'Open a file'
36) ☐ Demonstrate 'Copy a file'
37) ☐ Demonstrate 'Delete a file'
38) ☐ Demonstrate 'Rename a file'
39) ☐ Demonstrate 'Select a group of files'

Fundamental skills for working with documents, files, folders, and objects

40) ☐ Demonstrate 'Create a Microsoft Word document'
41) ☐ Demonstrate 'Create an Excel document'
42) ☐ Demonstrate 'Create a PowerPoint document'
43) ☐ Demonstrate 'Apply formatting to text (font, font size, font colour, font effects (bold, underline, etc.))'
44) ☐ Demonstrate 'Copy text or graphic objects to the Windows clipboard'
45) ☐ Demonstrate 'Insert an object (picture, clip art, text box, etc.)'
46) ☐ Demonstrate 'Cut (or delete) text or graphic objects from a document'
47) ☐ Demonstrate 'Paste text or graphic objects into a document'

48) ☐ Demonstrate 'Resize a graphic object to maintain aspect ratio'

49) ☐ Demonstrate 'Save the document, and save the file to a specific folder'

50) ☐ Demonstrate 'Find a saved document or file'

51) ☐ Demonstrate 'Print a document'

52) ☐ Demonstrate 'Scroll using scroll arrows and scroll bars'

53) ☐ Demonstrate 'Use the 'View' menu to display 'Toolbars''

54) ☐ Demonstrate 'Launch 'Help''

Internet Explorer (IE), Firefox, and Safari web browsers

55) ☐ Launch web browser: Internet Explorer or Firefox (Windows) or Safari

56) ☐ Demonstrate 'Access a website by entering the website's URL (address) into the browser's address bar'

57) ☐ Demonstrate 'Navigate through a website using hyperlinks, buttons, and tabs'

58) ☐ Demonstrate 'Print a web page'

59) ☐ Demonstrate 'Add (bookmark) a web page to the 'Favourites' list'

60) ☐ Demonstrate 'Use the browser's 'Back' and 'Forward' buttons to find recently displayed web pages'

61) ☐ Demonstrate 'Use the 'History' button to find recently displayed web pages'

62) ☐ Demonstrate 'Use the 'Favourites' list to display a 'bookmarked' web page'

63) ☐ Demonstrate 'Access [browser's] 'Help''

Email

64) ☐ Demonstrate 'Launch a web browser'

65) ☐ Demonstrate 'Log in to email provider or web service'

66) ☐ Demonstrate 'Create a new email'

67) ☐ Explain 'What is the email subject line for, and how is it used?'

68) ☐ Demonstrate 'Add recipients to the 'To:' line'

69) ☐ Demonstrate 'Send the email to multiple recipients'

70) ☐ Demonstrate 'Add recipients to the 'cc:' line, and explain why this might be used'

71) ☐ Demonstrate 'Send an email to one recipient, and 'cc:' the email to another recipient'

72) ☐ Demonstrate 'Reply to an email'

73) ☐ Demonstrate 'Forward an email'

74) ☐ Demonstrate 'Print an email'

75) ☐ Demonstrate 'Send a folder to a 'compressed' (zipped) folder, and explain why this is necessary when sending the folder as an attachment'

76) ☐ Demonstrate 'Open a 'compressed' (zipped) folder'

77) ☐ Demonstrate 'Send an attachment: attach a document to an email and send the email to another person'

Multimedia

78) ☐ Demonstrate 'Insert a CD/DVD'

79) ☐ Demonstrate 'Browse and play the CD/DVD'

80) ☐ Demonstrate 'Launch an audio/video player' (RealPlayer, Windows Media Player, etc.)

81) ☐ Demonstrate 'Using 'controls'' (play, pause, forward, adjust volume, etc.)

82) ☐ Demonstrate 'Using headphones and speakers' (plugging in, using controls, adjusting volume, etc.)

83) ☐ Demonstrate 'Eject a CD/DVD' safely

Student Reading for Unit 1: Basic computer terms in simple language

Computer hardware refers to the physical parts of a computer and related devices. These devices and parts can be divided into two types:
External hardware devices (also called 'peripherals')

1) These include monitors, keyboards, mice, printers, and scanners.
2) Internal hardware devices (also called 'components')

   These include the central processing unit (CPU), which houses mother boards, hard drives, and RAM. (You will read about these devices and parts separately.)

Different computer programs have different hardware requirements that list the minimum hardware required for the software to run.

Commonly used computers

These are the computer types that are most commonly used:

- Desktop computers
- Laptop or notebook computers
- Tablet PCs
- Handheld computers

Desktop computer

A desktop computer (or desktop PC) is a computer that mostly stays in a single location, meaning it is not 'portable'. It is usually a machine that has a tower-type hardware that houses the internal hardware components. Some desktop computers are all-in-one machines, such as iMacs. Desktop computers must remain connected to a wall outlet for power. They do not have an internal battery like mobile phones or laptops.

The majority of the computers used at home or in computer laboratories are desktop computers. Sometimes the desktop computers are also called 'workstations'.

Laptop computers

Laptop computers are portable computers that you can take with you and use in different places. They include a screen, a keyboard, and a 'touchpad', which serves as the mouse. Because laptops are meant to be used as portable computers, they have a battery, which allows them to operate without being plugged into a power outlet. Laptops also include a power adapter that allows them to use power from an outlet and recharges the battery. Laptops have almost the same features and functions that a desktop computer offers to a layman.

Although laptop computers provide convenience, they are more expensive than desktop computers. If portability is not a requirement for a user, then he or she should go for a desktop computer.

Tablet computers

Tablet PCs are small-sized handheld computers that have a touch screen or a pen-enabled interface. The 'pen', or 'stylus', is a special type of pointed device for working with touch screens. This screen can take user input by 'touch' function.

A tablet computer: Desktops, laptops, and tablet computers are also called 'personal computers'.

Main parts of a personal computer

Motherboard

The motherboard's main job is to hold the computer's microprocessor chip and let everything else connect to it. Every hardware device installed to the computer connects to the system through the motherboard. Hard drives, power supplies, memory modules, and adapter cards all connect to the motherboard via cables, which are inserted into the appropriate slots or connectors on the board. Along the motherboard are circuits that allow these components to transfer data back and forth.

In other words, everything that runs the computer or enhances its performance is either part of the motherboard or plugs into it via a slot or port.

(Reference: How Stuff Works: http://computer.howstuffworks.com/motherboard1.htm)

A motherboard is generally called 'mainboard' in layman's language. It houses the main circuit board and other important electronic components of a computer, including the CPU and memory. It also provides connectors for other computer peripherals (sound cards, video cards, network cards, hard drives, etc.).

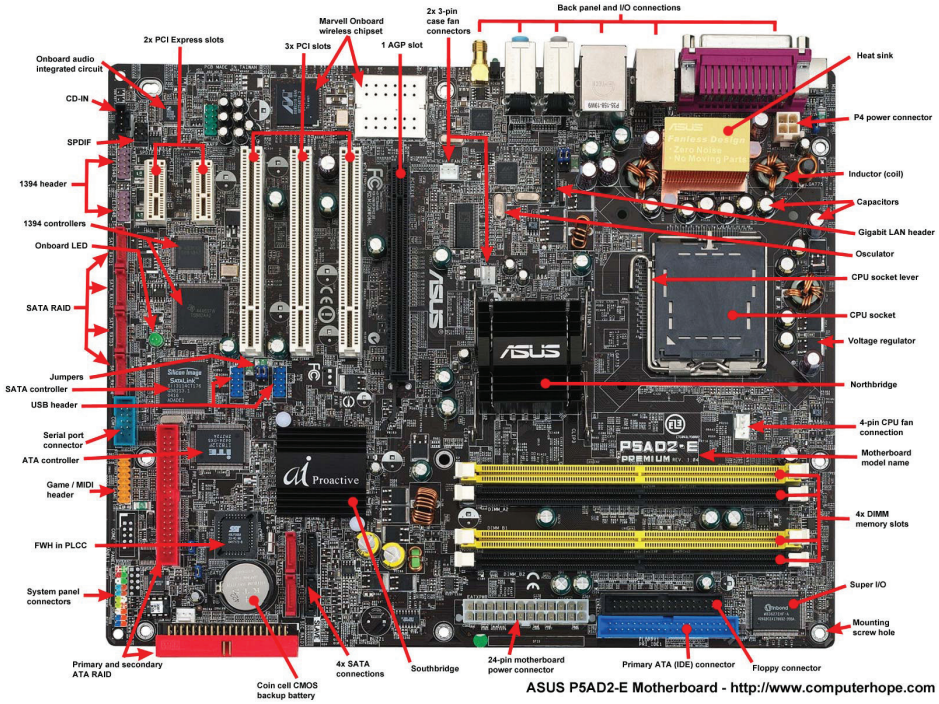
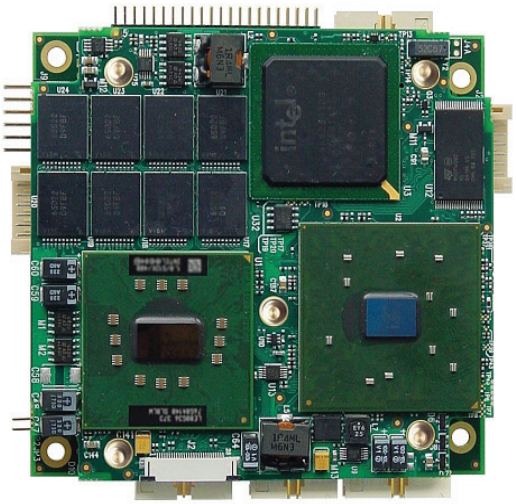


Diagram of a motherboard

CPU

CPU stands for 'central processing unit'. We can call it the brain of the computer. It processes everything from basic instructions to complex computer functions. Any time something needs to be computed, it gets sent to the CPU. When your computer is turned on, the CPU keeps functioning in the background all the time. Usually, the users don't need to interact directly with CPU hardware. The CPU can also be referred to simply as the 'processor'.

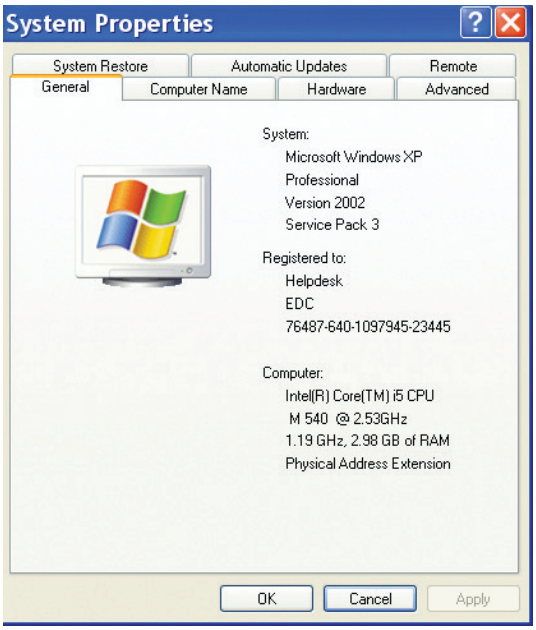


A CPU

Practice task:

Disassemble the motherboard and reassemble it once to get a basic hands-on introduction to some of the computer hardware.

RAM (Random Access Memory)
This is another type of memory and is basically your computer's short-term memory. RAM is measured in megabytes, abbreviated as MB. The more RAM you have, the faster your computer will work.



System Properties

RAM

Storage devices

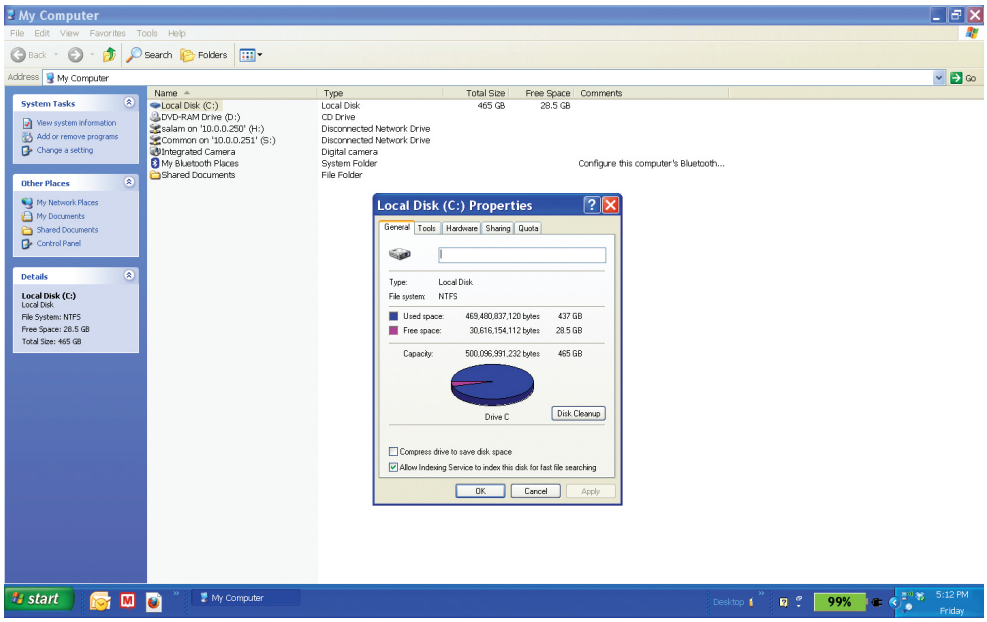
Hard drive

The hard drive is your computer's memory that saves users' data. It is a device inside your computer that holds tons and tons of information. Some of the biggest hard drives can hold as much information as 1000 sets of encyclopedias. Hard drive size is measured in gigabytes, abbreviated as GB, or terabytes, abbreviated as TB.

A hard drive

Practice task:

Compare the sizes of different hard disks. Once you know basic computer skills, you can get the information about disk size by going to 'My computer' and right-clicking on 'Properties' for any memory disk attached to your computer or your computer's internal hard disk (commonly called 'local disk', or C drive), as shown in the image.



My Computer

Portable storage devices: USB

USB stands for 'universal serial bus'. It is commonly called 'USB'. USB is the most common type of computer port used in today's computers. It is an 'industry standard' for data transfer, communication, and other types of connection to a computer. It is also used for 'power supply' between computer and other hardware devices. The majority of mobile phones being used today come with a USB data cable that allows the phone to be connected to a computer to transfer or access data stored on the phone (text, images, videos, etc.).

USB can be used to connect other portable storage devices (like a USB memory disk or hard drive, keyboard, mouse, digital camera, printer, scanner, etc.).

USB port (left), USB disk (also called a 'USB stick', right)

If your computer has a limited number of USB slots (also called 'ports'), you can always increase the number of slots by attaching a hardware called a 'USB hub'.

USB hub

Read more about USB:

- http://en.wikipedia.org/wiki/Universal_Serial_Bus.

Practice task:

Locate the USB port of different computers (and other devices) in your laboratory, home, or wherever accessible. Plug a USB device into the USB port and observe how the computer screen reacts when it 'finds' and identifies the device.

Compact disk storage devices

CD-ROM drive (Compact Disc – Read-Only Memory)
CDs are disks that store data. A CD-ROM drive is a CD player for your computer. It is better than a common CD player because it also plays and reads other types of data, not just music CDs. It also plays game CDs and CDs with computer programs on them as well. Most computers have CD-ROM drives.

Computers equipped with a CD-ROM drive can only 'read' CDs.

CD-RW drive (Compact Disc – ReWritable)
A CD-RW drive does the same thing as a CD-ROM drive, but a CD-RW drive also lets you record data on CDs, or digitally 'write' on CDs. You can record your data files, photographs, videos, music CDs, game CDs, and CDs with computer programs on them with a CD-RW drive. Some computers have CD-RW drives.

DVD drive (Digital Versatile Disc)
DVDs are discs that have a much bigger storage capacity than CDs. In other words, DVDs hold a lot more information than CDs. A DVD-R drive is the same thing as a CD-ROM drive, but a DVD-R drive can also play discs. Some more expensive computers have DVD drives.

DVD-R drives only allow users to 'read' DVDs, while DVD-RW drives also allow users to 'write' on DVDs (commonly called 'burning' a DVD).

Input and output (I/O) devices

Keyboard

A keyboard

The keyboard is one of the primary input devices used with a computer. A keyboard is basically a board of keys, i.e. an arrangement of buttons and keys that can be pressed to make an 'input' to a computer. The keyboard resembles a typewriter keyboard, with an arrangement of letters, numbers, and some special keys. This keyboard layout is known as the QWERTY design, which gets its name from the first six letters across in the upper-left-hand corner of the keyboard.

Most of today's computer keyboards also have a row of function keys (F1 through F16) along the top of the keyboard, arrow keys arranged in an upside-down T, and a numeric keypad on the right-hand side. Some keyboards have even more buttons, allowing you to change the system volume, eject a CD, or open programs such as your email or Web browser.

In normal usage, the keyboard is used to type text and numbers into a word processor, text editor, or other program. A keyboard is also used to give commands to the operating system of a computer, such as Windows' Control-Alt-Delete combination (these three keys pressed together), which brings up a task window or shuts down the machine.

Mouse

Like the keyboard, a mouse is another input device. A 'mouse' in computer language is a hand-operated electronic device that controls the coordinates of a cursor on your computer screen as you move it around. In simple terms, the function of a mouse is to control a cursor on the monitor that can be used to tell your computer what to do. On the bottom of the device is a ball that rolls on the surface of the table or mousepad. Modern mice replace the ball with an optical feature. Such a mouse is called an optical mouse.

Wheel mouse (left); Optical mouse (right)

Scanner

In computing, an image scanner is a device that optically scans images, printed text, handwriting, or objects and converts them to digital images. (Source: Wikipedia: http://en.wikipedia.org/wiki/Image_scanner.)

A scanner is a device that can 'look' at text and images and then save them into your computer. A scanner works like an eye of a computer.

Flatbed scanner (left); Bar code scanner (right)

Monitor

A computer monitor, or screen, is the part that looks like a television, and it displays all the information coming from the computer. The monitor is also called the 'display' or 'screen'. The monitor displays the computer's user interface and open programs, allowing the user to interact with the computer, typically using the keyboard and mouse.

The older technology for monitors was based on cathode ray tubes (CRTs), which made them rather heavy and caused them to take up a lot of desk space. Most modern monitors are built using an advanced liquid crystal display (LCD) technology and are commonly referred to as flat-screen displays. These thin monitors take up much less space than the older CRT displays. This means that people with LCD monitors have more desk space to clutter up with stacks of papers, pens, and other objects. With advancements in computer technology, the monitors or display screens have also become input devices with a 'touch-type' screen.

CRT monitor

LCD monitor

Printer

A printer is another peripheral device that allows you to print text and images from your computer onto paper. Printers are available in a wide range of features. Most personal printers are directly attached to a computer with a cable, but some do not need a cable (wireless). In offices, many people share a common printer that is connected to a network. Modern computers also offer scanning, photocopying, and emailing features.

Printer

Parts of a laptop computer

The basic parts of a laptop computer are the **screen**, **keyboard**, **touchpad**, **speakers**, **battery**, and **AC adaptor**. Beyond these basic parts are the hardware items located inside the laptop and the **peripherals**, which are **optional pieces of hardware** that enable the computer to accomplish additional tasks.

Monitor

The laptop monitor (the part that resembles a television screen) is where the computer displays text and pictures.

Keyboard

The laptop keyboard is a piece of hardware that resembles a typewriter keyboard. It is one of the primary ways you communicate with the computer and enter data.

Speakers

Speakers on a laptop are usually small and built into the screen or the body of the laptop. The speakers allow you to hear computer sounds, audio streamed from the Internet, CDs, and DVDs, and more.

Touchpad
On a laptop, a touchpad is a substitute for the mouse. Move your finger on the touchpad to move around the screen and select text and objects. The buttons below the touchpad operate like mouse buttons.

Touchpad of a laptop

Battery
The battery in a laptop serves as its lifeline. A laptop will work without a battery if it is receiving power from a power adapter. The battery allows you to be more mobile without having to be near a power outlet for an extended period of time. Most laptop batteries will last for about 1.5–2 hours before needing to be recharged. If your battery dies or has a defect, you can buy a new one from your computer's manufacturer or a local computer or electronics store.

AC Adaptor
The AC adaptor is the source of electric power for a laptop. The power adapter does two jobs when it is plugged in: powers the laptop and charges the battery.

Glossary of other computer terms

Hard copy
A hard copy is a printed document. It may be a text file, photograph, drawing, or any other type of printable file. For example, instead of emailing a business memo, it may be sent out as a hard copy, or an actual physical paper containing the memo.

Soft copy (also called 'electronic copy')
When a document is created on a computer, it is typically saved as a file on the computer's hard drive. This is sometimes referred to as a 'soft copy'. While the file can be easily opened and edited on a computer, it can also be easily deleted. Therefore, sometimes printing a hard copy is done to create a physical backup of the document.

Student Reading: Most frequently used computer applications

Computer application or 'application software', also known as an application or app, is computer software designed to help the user to perform specific tasks. Some common examples include word-processing applications, spreadsheets, media players, and presentation applications.

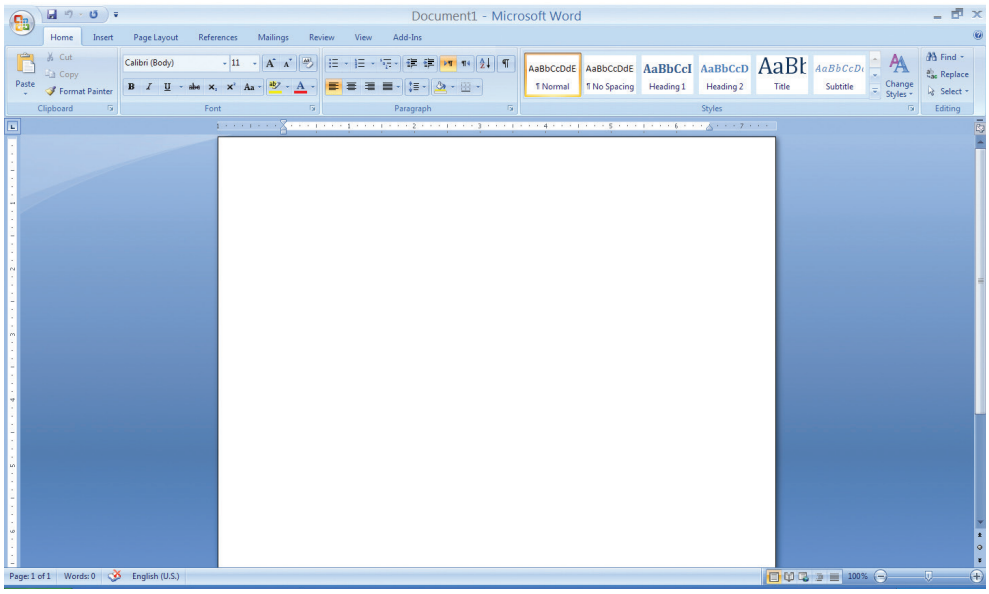
Word-processing applications (typing and document readers)

Word-processing applications or packages allow a user to apply various processes on the textual information, including typing text, editing*, selecting and deleting text, and applying various basic formatting effects to the text (size, font, style, alignment, highlighting, etc.). Other special features depend on the particular application, such as finding and replacing text, page layout, checking and correcting spelling, etc.

*Editing means making changes to existing text in a document.

Microsoft Word (MS Word):

Word is the most widely used word-processing application around the world. Word files are commonly used as the format for sending text documents via email because almost every user with a computer can read a Word document by using the Word application. Microsoft Word's native file formats are denoted either by a .doc or .docx file extension. Word can import and display images in common bitmap formats, such as JPG and GIF. It can also be used to create and display simple line art. Opening a Word file in a version of Word other than the one with which it was created can cause incorrect display of the document. Formatting created in newer versions does not always survive when viewed in older versions of the program, nearly always because that capability does not exist in the previous versions. MS Word offers an extensive menu for text formatting, art effects, and image handling. MS Word has the capability to check the spelling and grammar in a document.



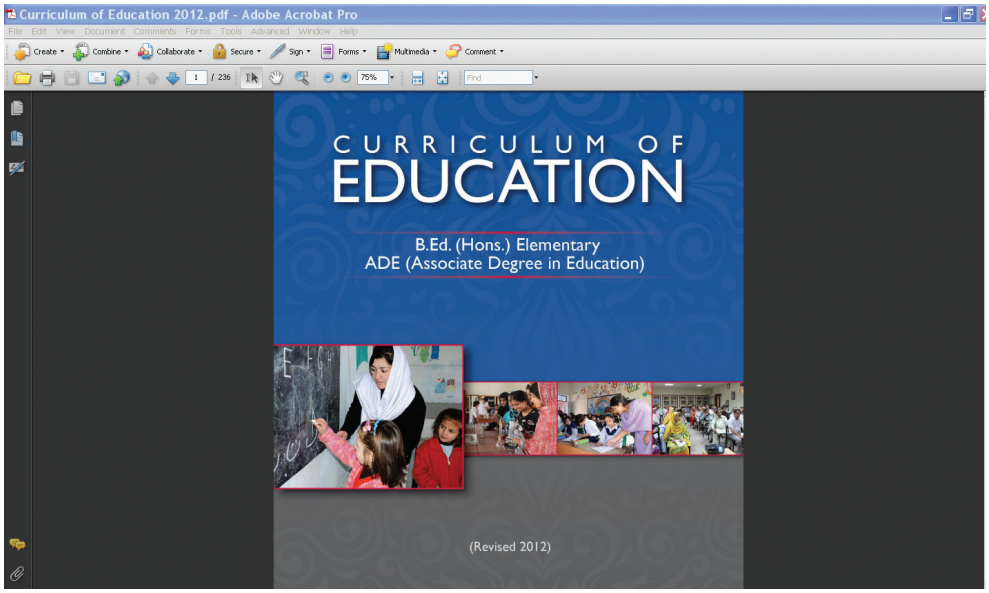
MS Word user screen

Adobe PDF:

PDF was developed in the early 1990s by Adobe Systems as a way to share documents, including text formatting and inline images. PDF stands for Portable Document Format. This document type is called 'portable' because it is independent of application software, hardware, and operating systems. Adobe document files have a .pdf extension. Each PDF file encapsulates a complete description of a fixed-layout flat document, including the text, fonts, graphics, and other information needed to display it. PDF reader can be downloaded free of cost from the Adobe website:

- http://get.adobe.com/reader/.

Most of the resources available on the Web are provided either in MS Word or PDF format.



Adobe PDF user screen

Spreadsheets

MS Excel:
Excel is an electronic spreadsheet program that can be used for storing, organizing, and manipulating data. Microsoft Excel's native file formats are denoted either by a .xls or .xlsx file extension.

When you look at the Excel screen (refer to the example below of an MS Excel 2007 user screen), you see a rectangular table, or grid of rows and columns. The horizontal rows are identified by numbers (1, 2, 3), and the vertical columns are identified by letters of the alphabet (A, B, C). Columns beyond 26 are identified by two or more letters, such as AA, AB, AC.

The intersection point between a column and a row is a small rectangular box known as a cell. A cell is the basic unit for storing data in the spreadsheet. Because an Excel spreadsheet contains thousands of these cells, each is given a cell reference, or address, to identify it.

The cell reference is a combination of the column letter and the row number, such as A3, B6, or AA345.

The types of data that a cell can hold include numbers, text, or formulas. Just as in math class, formulas are used for calculations, usually involving data contained in other cells. Excel and other electronic spreadsheets include a number of built-in formulas used for common tasks known as functions.
Spreadsheets are often used to store financial data. Formulas and functions that are used on this type of data include:

- Performing basic mathematical operations, such as summing columns and rows of figures
- Finding values, such as profit or loss
- Calculating repayment plans for loans or mortgages
- Finding the average, maximum, or minimum values in a specified range of data.

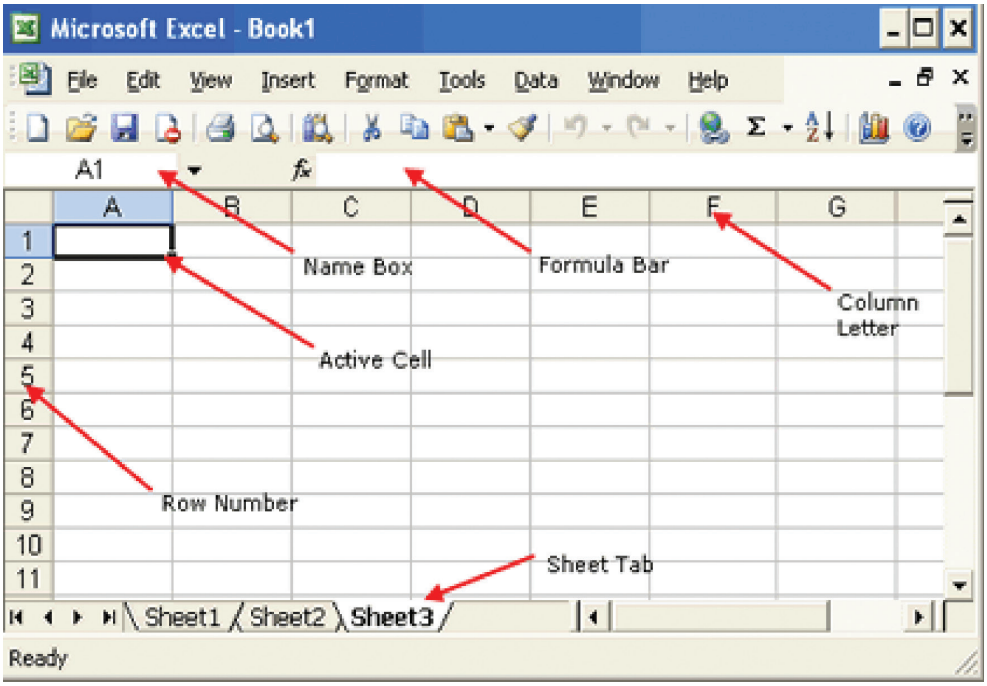
Teachers can use Excel spreadsheets in a variety of ways, including:

- As a school/classroom-management tool
    - Tracking monthly attendance, student-wise; tracking and comparing attendance, class-wise; identifying patterns and trends, etc.
    - Preparing examination results (mark sheets, quiz results, aggregating annual scores, etc.)
    - Recording and maintaining yearly student-admission data
    - Maintaining stock/inventory (items issues, items used, items in stock, etc.)
    - Maintaining library resources, cataloguing, etc.

- As a research and evaluation tool
  - Graphing or charting data to assist users in identifying data trends
  - Sorting and filtering data to find specific information

- As an 'accounts and procurement management' tool
  - Keeping a record of salaries, school funds, etc.
  - Maintaining a record of purchases etc.
  - Preparing comparative statements for purchases etc.

The information garnered in a spreadsheet can easily be incorporated into electronic presentations or web pages or printed in report form.



MS Excel 2007 user screen

Sources:

- http://spreadsheets.about.com/od/tipsandfaqs/f/excel_use.htm.
- www.wikipedia.com.

Media players

A media player is a software application that plays multimedia content (audio, video). It can play the multimedia files that are either stored in the computer's hard drive or from other sources, like network drives, the Internet, etc. A media player can play several multimedia formats, like mp3, mp4, wav, mov, wma, etc.

Media players often display icons known from physical devices such as tape recorders and CD players. Examples of these icons are:

play *pause* *stop*

Microsoft Windows comes with Windows Media Player pre-installed. Some Apple products (like iPod, iPad, iPhone, etc.) come with iTunes pre-installed.

Some common media players are:

- Windows Media Player (WMP)
- QuickTime Player
- RealPlayer
- VLC Player
- iTunes

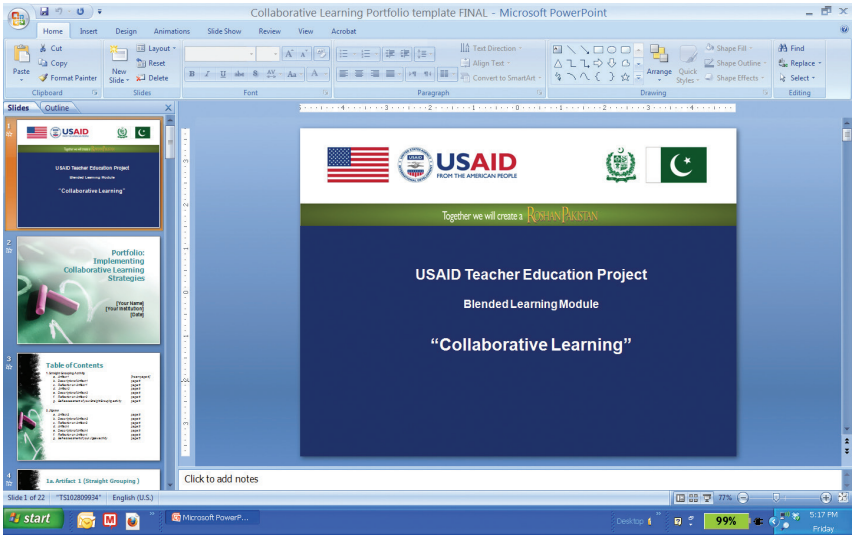
Apple iTunes is a versatile application that has several advanced features. It is a comprehensive application that not only works as a media player, but also acts as a multimedia library and CD burner.

Presentation applications

Presentation applications give users the tools needed to organize information to be shared with an online or offline audience as slide shows, videos, or photomontages. It typically includes three major functions: an editor that allows text to be inserted and formatted, a method for inserting and manipulating graphic images, and a slide-show system to display the content. In Pakistan, the most commonly used presentation application is Microsoft PowerPoint. It is also the most commonly used program used worldwide for presentations.

Microsoft PowerPoint:

PowerPoint is a presentation software program that is part of the Microsoft Office package. PowerPoint uses a graphical approach to presentations in the form of slide shows that accompany the oral delivery of the topic. This program is widely used in business and classrooms and is an effective tool when used for training purposes. PowerPoint is one of the simplest computer programs to learn. Anyone can create stunning presentations that look like they were designed by a professional. Most of the PowerPoint basic word-typing and formatting features are the same as MS Word. In addition, PowerPoint offers some other features, such as slide transitions, timing, text and image effects, basic animation, etc.



Screen shot MS PowerPoint

Image/picture-viewing applications

An image viewer, or image browser, is a computer program that can display stored graphical images; it can often handle various graphics file formats, such as .gif, .bmp, .jpg, .jpeg, .tiff, etc.

Image viewers provide flexibility to the user by providing a direct view of the directory structure available on a hard disk. Most image viewers do not provide any kind of automatic organization of pictures, and therefore, the burden remains on the user to create and maintain his or her folder structure (using tag- or folder-based methods). However, some image viewers also have features for organizing images, especially an image database, and hence can also be used as image organizers, such as Picasa and ACDSee.

Typical features of image viewers are:

- Basic viewing operations, such as zooming and rotation
- Full-screen display
- Slide show
- Thumbnail display
- Printing
- Screen capture.

Common image viewers include: (Windows) Windows Picture and Fax Viewer, ACDSee, Picassa/Picassa Web.

➢ Source: www.wikipedia.com.

Commonly used online applications

Google Docs

Google Docs is a free Web-based document-sharing service offered by Google within its Google Drive service. It also was a storage service but has since been replaced by Google Drive. It allows users to create and edit documents online while collaborating in real time with other users.

Google Docs serves as a collaborative tool for editing documents in real time. Documents can be shared, opened, and edited by multiple users simultaneously.

Google Docs can automatically store and synchronize any Microsoft Word document, PowerPoint presentation, or Excel spreadsheet to Google Docs in Google Docs or Microsoft Office formats. The Google Doc copy is automatically updated each time the Microsoft Office document is saved. Microsoft Office documents can be edited offline and synchronized later when online.

Since Google Docs launched, 1 GB of storage was included for free. On 24 April 2012, the free storage increased to 5 GBs. Google Docs supports 15 file formats for viewing, although you can upload any, including:

- Microsoft Word (.doc and .docx)
- Microsoft Excel (.xls and .xlsx)
- Microsoft PowerPoint (.ppt and .pptx)
- Adobe Portable Document Format (.pdf).

Web browsers

A web browser is a software application that is installed on a user computer that allows browsing web pages when connected to the Internet. Web pages are identified by their addresses, such as www.google.com or www.edc.org.

Each web page has a unique address. A main web page may have connections, or links, to other pages, and these connections are called hyperlinks.

A web browser can also be defined as an application software or program designed to enable users to access, retrieve, and view documents and other resources on the Internet.

The most commonly used web browsers are Internet Explorer, Google Chrome, Firefox, Opera, and Safari.

Higher Education Commission