



My Book Of Computer

5

***Teacher's
Resource Book***

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Lesson 1: History of Computers: story of the PC systems

Aim of the lesson:

History is as important as our future. It has been said that he who controls the past controls the future. Our view of history shapes the way we view the present. Things that we think of as advanced and modern have their roots in the past. Computer has its rich history. Our children should know the course of events, our scientist followed in the past for the development of modern computer.

Learning objectives

In this lesson, students will learn

- Contribution of the companies in the development of the personal computer
- The formative period of the development of the computer
- PC revolution

Teacher support:

Get the information from the textbook and from the following links.

Visit:

<http://en.wikipedia.org/wiki/PARC>

http://en.wikipedia.org/wiki/Microcomputer_revolution

<http://en.wikipedia.org/wiki/Microsoft>

www.about.com

Warm up:

In previous class, you have taught a brief history to your students. In this lesson, you will teach them the revolution also. For lesson stimulus, you may ask:

- What are personal computers?
- Why do we need Personal computer?
- Why laptops are better? Etc.

Discussion:

It is better if you explain the History in points and explain every point in detail. They should know the basic knowledge of the contribution of companies and the revolution of computers. As:

Xerox PARC:

- Xerox is a research and development company in Palo Alto, California
- It mainly makes Photostat machines and office equipments
- PARC stands for Palo Alto Research Centre, which is a research lab developed by Xerox
- Xerox PARC developed many elements of computing system, e.g., Laser, Bitmap Graphics, GUI, WYSIWYG, and Ethernet. (get details from the book)

Apple:

- Apple is an American multinational corporation in California that designs, develops, and sells consumer electronics, computer Software and Personal computers.
- Apple could use various Xerox technologies in its computers. Included: GUI, mouse, WYSIWYG and Ethernet.

- Apple made major additions to PARC GUI which included Menu bar, Drop down menu and Recycle Bin in Windows.

IBM:

- The International Business Machine, the IBM, is the largest computer company in the world.
- It traces its roots to Hollerith Computing Desk, which made computing machines.
- IBM is called a Mother company as it developed first template of Personal Computer and is used to build PC in the world.

Intel:

- The Integrated Electronics that is the Intel is famous for making microprocessors or motherboard chipsets for Desktop and Laptop computers.

Microsoft:

- Microsoft is the combination of Microcomputers and the Software, established in 1975.
- It is famous for developing Operating system.

The formative years:

(Personal computers were developed in these years) e.g.

- Apple company produced Apple 1 in 1976
- Apple Lisa was developed, first PC with the mouse.
- Commodore released PET.
- Seagate Technology created first Hard disk for microcomputers, called ST506
- IBM developed OS and connecting with Microsoft, created DOS (Disk Operating system). DOS provides command line interface for user to operate a computer.

You should write difficult words and the key words of the topic on the board.

Let students read the lesson and with more understanding and mark difficult words as well as the key words. Make them read aloud. Explain every feature in detail as in the textbook.

Keywords	Common
Microprocessors, Xerox PARC, GUI, WYSIWYG, Ethernet, USB flash Driver, MITS, PET, Microsoft, DOS, non-programmers, serial and parallel ports, multi-core processors,	sustained narrative, relentless development, technology, Template, bedrock, revolutionary features, adoption, momentum, underpinnings significant, conceptualize, indispensable part

Summary:

See discussions

Assessment:

Assessment is very important part of the session. Do assessment based on your explanation, either by oral test or by the written test.

You may ask questions differently about a lesson, e.g.

- What is IBM?
- Which invention led to the rise of PCs?
- When IBM did introduced first PC?
- What were the major problems with the early computers?

Assignment:

As we have mentioned earlier that **Skill Development** is the core objective of the teaching. In computer education, computer skills and their understanding should be enhanced.

You may ask them to:

- You can ask them to assemble points for Illustrator Program for class presentation.

Activity:

- Maintain a personal dictionary. Give them initial words to write and ask them to write their meanings.
- Activity from the book, page no.25

Comprehension Assessment (Answers)

1. **Xerox PARC** brought advancement in PCs, include; Laser printers, graphics, graphical User Interface (GUI) with mouse, WYSIWYG, Ethernet, etc. **Apple** used various Xerox technologies and added GUI PARC that was Menu bars, Drop down menus and Thrash (Recycle bin). **IBM** came up with workable template of personal computers. **Intel** contributed in the advancement of microprocessors. **Microsoft** developed MITS Altair for PCs.
2. IBM's first PC was so popular because of its smaller size, powerful microprocessor and the quality of monitors, keyboards etc.
3. The introduction of Microsoft Windows has led PC go mainstream in 1990s. Windows made PC very easy to use.
4. Early portable computers were greater in size and weight, which were again difficult to carry.
5. Smart phones and tablet PCs have contributed in the widespread use of computers today.

Lesson 2: LAN: Connecting computers together

Aim of the lesson:

The aim of this lesson is to give a brief introduction to computer networking and its importance. It will focus on how computer networking enables computers to share data.

Learning objectives

In this lesson, students will learn about

- Computer network and its type.



- Different methods to connect the computers.
- Design of the network
- Difference between LAN and WAN
- Internet Devices.

Teacher support:

Get detailed information on **learning objectives** from the textbook, from following links and **how-to-teach techniques** from given TRB.

Visit:

<http://fcit.usf.edu/network>

<http://whatis.techtarget.com/definition/network-topology>

http://en.wikipedia.org/wiki/Local_area_network

<http://study.com/academy/lesson/types-of-networks>

Warm up:

For the lesson stimulus, you may ask:

- What is internet
- Why internet is important?
- What if there is no internet?
- Which type of internet you use?
- Do you have cable internet or Wi-Fi internet?

Discussion:

Grade 5 students generally know the use of internet. They know how to play games on internet. They have idea of emailing. They know about face book and twitter; they visit the website for information. Elaborate that we need to share information via face book, twitter, emailing, etc, and all is possible through networking only or connecting all computers together through internet. Networks are built with a mix of computer hardware and computer software. Network connects the computer with each other to share data.

Take them to computer lab and show them sharing data.

Tell them different types of network, based on geography and differences between NFC, LAN and WAN. (See description from the book and the links).

There is a particular design for the network to be active. That design or structure is called its topology. Explain them five main types of topology.

Bus topology: it connects all computers through wires

Ring topology: it connects all computers through paired physical interface

Star topology: it connects all computers through single hub or a switch

Point to point topology: it connects all computers through cables

Point to multi-point topology: it connects single device to several computers.

Explain them that what is the difference between physical and logical topology (**see book page no.15**)

You can show different internet devices and they connect computers. Like hub, routers, firewall, wireless LAN. (**See book page 15-16**)

In Class, you should write difficult words and the key words of the topic on the board.

Let students read the lesson and with more understanding and mark difficult words as well as the key words. Make them read aloud. Explain every feature in detail as in the textbook.

Keywords	Common
Network	Isolation
Internet, Ethernet	Electronic mail
NFC, LAN, WAN,	Communication
Interplanetary internet,	Intended
Hubs, topology, routers,	Frequently
	Central access

Summary:

- Network is the set connected computer, which share data and information.
- All computers are connected with each other through communication ports.
- Types of network are based on the geographical scope e.g. NFC is the network for nearest proximities and interplanetary if for the largest distance.
- LAN and WAN the widely used networks.
- LAN is used for small areas and connects computers of building and floors.
- WAN connects the computer of the whole world.
- There is specific design required for the connections. This design is called topology.
- Hub, routers, and switches are the Network devices.

Assessment:

For assessment, you may ask questions differently about a lesson, e.g.

- Why there is the need of network?
- Why network is important?
- How can we connect computers with each other?
- Why Local Area Network is different from the wide area Network?

Assignment:

- Assign a task to the student to search from network and its types by using different websites and write a brief note (hand written) on A4 size paper and paste it in your computer file.
- You can assign another task for searching more information about routers and switches that is different from book and mail it to your Net Extra account.

Activity:

- Maintain a personal dictionary. Write keywords from the lesson in the dictionary with its meanings.
- Activity from the book, page no.17

Helping tools:

As a support material, you should tell them about the information pools.

- **The Net Extra.**

As it has been mentioned that the Net extra is especially designed for the teachers and the students. Here you can find not only the text material but also the related information, activities and



exercises. You can guide your students to use net extra for more information.

Log on to net extra account at

www.learningwell.pk

- **Other links:**

Besides the Net Extra, here we give other sites also which are **educational kid's computer games and activities** for elementary students to learn on the web.

Visit: <http://www.abcya.com/input.html>

Comprehension Assessment (Answers)

1. We connect computers so that we can share resources and information through internet. We can also make social interactions like phone calls and messages with other people.
2. The connection will be the LAN as the LAN is the small area or Local area Network used in e.g. rooms and buildings.
3. In physical topology, conform to a certain design while the logical topology shows how data flows within a network.
4. Yes, they are interchangeable because switches and routers are devices that let you connect one or more computers to other computers, networked devices, or even other networks.
5. In wireless LAN, we can face signal problems due walls and while in wired LAN we do not have to face signals problem. In wireless LAN we can use the internet sitting anywhere within the signal range while the Network of wired LAN is limited.

Lesson 3: Tablets: PC takes a new shape

Aim of the lesson:

The tablets without keyboards were the first tablets which gained great success, and they have contributed greatly to the advancement of education. Tablets are viewed as a revolutionary platform for learning and communicating in that they provide a portable and interactive method of consuming content and engaging with peers.

While technological world continues to move forward with a quick pace, educators seem to integrate technology in the schools with the hopes of increasing the efficiency and effectiveness of student learning.

Learning objectives

In this lesson, students will learn about

- Rise of tablet computers
- The history of the tables
- Tablets and the Smartphone
- Phablets
- The variations in tablet theme
- Limitations of the tablets.



Teacher support:

Get detailed information on **learning objectives** from the textbook, from following links and **how-to-teach techniques** from given TRB.

Visit:

<http://searchmobilecomputing.techtarget.com/definition/tablet-PC>

http://cellphones.about.com/od/glossary/g/smart_defined.htm

http://en.wikipedia.org/wiki/Tablet_computer

Warm up:

For the lesson stimulus, you may show the pictures of tablets and ask:

- What is this called?
- Do you have tablet in your home?
- If don't, have you ever seen other using tablets?
- What is the size and shape of the tablet?
- Why tablet is so easy to carry?
- What do you think why scientist invented tablets when they had desktops or laptops?

Discussion:

Use flash cards for showing laptop, tablet PC and Smartphone to students for better understanding the concept and differences.

Start explanation from the need of the tablets. It is better if you ask them to tell the benefits of tablets if they use it. They may say that they can carry it anywhere, they are small, they are turned on all the time, etc.

Explain that scientist wanted to work on computer in the field. For that, they needed portable computers with lightweight and efficiency; eventually they succeeded in producing tablets. You may say:

- Tablets are small in size than laptops.
- They have lightweight and easily movable.
- They work on touch screen.
- They are accurate, reliable and do not get heated like laptops and desktops.
- They do not need to be turned on every time.
- It favors all the body postures. You do not need to do upright work only.

They must have heard the word Smartphone. Ask if their parents, cousins, or other relatives use them. Tell them that smart phones are more powerful pocket computers than a tablet. Both can perform same functions, while Phablets are the Smartphone tablets.

It is highly appreciated if you arrange smart phones and tablets in class from the help of your co-teachers. **See book page no.18-22**

In Class, you should write difficult words and the key words of the topic on the board.

Let students read the lesson and with more understanding and mark difficult words as well as the key words. Make them read aloud. Explain every feature in detail as in the textbook.

Keywords	Common
Tablets Smartphone phablet eBook readers	Unsuitable, portable, handy, rationale, Rise, successive generations, immensely popular, models, limitations

Summary:

- Tablets are very easy to carry and function in the field.
- Tablets do not need input devices like keyboard and mouse.
- They are touch screen
- Smartphone is comparatively smaller than tablet
- Phablets lies between tablet and smart phone
- Cloud computing is the ongoing research to make tablets as powerful as PC.

Assessment:

For assessment, you may ask questions differently about a lesson, e.g.

- Tell the features of the tablets
- Why tablets are comfortable computers?
- Which computer will you prefer to carry with you working in the field?
- What system could enhance the memory of tablets in future?

Assignment:

- You may ask them to prepare notes on importance of tablets and the Smartphone with the help of web contents.

Activity:

- Maintain a personal dictionary. Write keywords from the lesson in the dictionary with its meanings.
- Activity from the book, page no.23

Helping tools:

As a support material, you should tell them about the information pools.

- **The Net Extra.**

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www.learningwell.pk

- **Other links:**

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Visit: <http://www.abcya.com/input.html>

Comprehension Assessment(Answers)

1. Tablets are portable and carried easily. They require no input and output devices.



2. People required a lighter computer, which can be carried easily in the field, remain cool while working and have large storage capacity even being small.
3. Surface tablet brought some variation in tablet theme. These are surface RT and Pro. Both have optional cover to use as a keyboard.
RT is the normal tablet, with a low powered processor. It can run only lightweight versions of regular programs Surface Pro is a full featured PC and can run all Windows software.
4. Tablets and Smartphone run on an operating system. They are portable as tablet but Smartphone have calling and messaging facilities in addition to other functions of tablets.
5. Memory issues of tablets can be solved with the migration of hardware to the cloud.

Lesson 4: Program for 3D and animation: Maya

Aim of the lesson:

Maya is application used to generate 3D assets from 2D for use in film, television, game development and architecture. Students love seeing 3D animation films, like **How to Train Your Dragon, Frozen, Ice Age, Toy Story** and more. But where they are stuck on HOW it happened, how it brought characters to life. That's why our sole purpose is to help students understand their love of animation and turn it into the artistic and technical skills.

Learning objectives

In this lesson, students will learn about

- What is 3D software?
- What is MAYA?
- Basic tools of MAYA
- What are 3D and 2D images?
- What is a Model?

Teacher support:

Get detailed information on **learning objectives** from the textbook, from following links and **how-to-teach techniques** from given TRB.

Visit:

www.webopedia.com

<http://whatis.techtarget.com/definition/Maya>

[http://wiki.answers.com/Q/What is the difference between 2D and 3D](http://wiki.answers.com/Q/What_is_the_difference_between_2D_and_3D)

<http://whatis.techtarget.com/definition/Maya>

<http://www.pixelstreetstudios.com/maya80/createPolygon/>

<http://www.3dtutorialzone.com/tutorial?id=96>

<http://www.webopedia.com/TERM/C/compositing.html>

<http://www.wisageek.com/what-is-3d-compositing.htm>

<http://www.autodesk.com/products/autodesk-maya/overview>

<http://3d.about.com/>

http://www.ehow.com/how_2295766_use-key-frame-movement.html

<http://www.expertrating.com/courseware/MAYACourse/MAYA-Rendering-1.asp>

Warm up:

This lesson is about 3D movies and animations. Before they know the tools of animation, they should recognize, which movies, they have watched, are 3D and animated.

For the lesson stimulus, you may ask:

- Have you watched movie Spiderman, Batman, Shrek, frozen, etc?
- Spider man jumps over the buildings in movie. Do you think it is real?
- Are the characters in frozen movie real? If No, how they are alive?
- Do you know computer creates all these actions and characters in cartoons and movies?

Discussion:

Take your students to computer lab. Show them the clips of Tom and Jerry show, Spiderman, Shrek, Frozen, etc or whatever you like. While they are watching, keep asking to drag their minds towards the lesson. You may ask about Olaf, Elsa, Anna, etc in Frozen. They know this is not real. Ask them how they are in action.

Show them some picture drawings and let them compare with animated characters. Discuss how they are different in shape, reality, etc. Now tell them that all mentioned movies and more, are 3D animated films as being unreal they behave like real by animation software: Maya.

To explain 3D, ask them to draw a square then show them any box in real. Elaborate that the drawn square just have length and width but box has dept too. That is why those pictures, which have only two dimension i.e. height and width, are called 2D and those with depth are called 3D.

(2D=2Dimension, 3D=3Dimension)

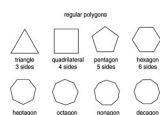
Now, you may discuss about Maya. Explain very friendly and logically that to create any character, first its design is required that how it should look like; its features and qualities then bring them into action. That is why 3D animation software works on two steps. **Model making or design development** like cars, buildings, plants etc and **animation** to give live to the models according to the story. **(See book page no.24-25)**

It is better if you describe the animation steps and tools of Maya in flow chart or in points.

Sketching of objects or model making in 2D ⇨ 3D model making from 2D, using software Maya ⇨ giving life or animation to 3D character ⇨ comes 3D animated movie

Processing of 2D object using Maya:

1. **Images** and sketches: Object is made either manually on a sheet and then scanned or using illustrator.
2. **Polygons:** Polygons gives 3 dimensions to the object. Polygons are named according to the number of sides and angles they have. The most familiar **polygons** are the triangle, the rectangle, and the square. In this



- 3 Variations: in this step model is given reality by adding variations like shapes, colors and gradients.
- 4 Animation: movement is given in this step. In the motion of an object with timings and smoothness of animations effects are developed by removing joint and giving fluid effects.

- 5 Rendering: In this step, lights, material and background of the animation are determined.
- 6 Compositing: It combines live videos with 3D models using special software e.g. **Fusion** used for movie avatar.

Explanation of procedural steps in step always works.

In Class, you should write difficult words and the key words of the topic on the board.

Let students read the lesson and with more understanding and mark difficult words as well as the key words. Make them read aloud. Explain every feature in detail as in the textbook.

Keywords	Common
2D and 3D Model and animation Maya, Polygon, edges and vertices, fluid effects, screenshots, key frame animation, path animation, rendering, compositing, fusion	Dimensions, canvas, scanned picture, rotate, components, variations Elimination, fluid, prominent example

Summary:

- 3D objects are the objects having all three dimensions and can rotate in 360 degree.
- 3D software like Maya, converts 2D object into 3D or a model and give them reality or animation.
- Sketches or images are made first and then imported to Software Maya for its modeling and animation.
- Polygons are 3D geometrical figures to make models
- In modeling shapes and color to the object are given.
- In animation, movement to the object is added. The quality of animation depends on motion, timings and smooth effects.
- Key frame animation and Path animation are the forms of Maya.
- In rendering step, light, material and background is given to the object.
- Compositing is the assembling of visual elements from different sources into a single image or animation.

Assessment:

For assessment, you may ask questions differently about a lesson, e.g.

- What is the difference between 2D and 3D?
- What are animated movies?
- How are we able to make any 3D animated movies?
- What are different steps to make any 3D movie through Maya?
- What is animation in Maya?
- Why polygon is used in Maya?
- What is the importance of model in Maya?

Assignment:

- You may ask them to prepare notes on animation software Maya and its importance.

Activity:

- Maintain a personal dictionary. Write keywords from the lesson in the dictionary with its meanings.
- Activity from the book, page no.29

Helping tools:

As a support material, you should tell them about the information pools.

- The Net Extra.**

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Log on to net extra account at

www.learningwell.pk

- Other links:**

Besides the Net Extra, here we give other sites also which are **educational kids computer games and activities** for elementary students to learn on the web.

Visit:

<http://www.abcya.com/input.html>

Comprehension Assessment (Answers)

- Yes 'chapati' is a 3D object
- Models are core of 3D because it can rotate 360° in any direction, in all its dimensions.
- It looks real because it is a 3D image.
- Practical
- Compositing is very important in modern movies because it combines visual elements from separate sources into single images.

Lesson 5: Mastering Word: Learning to make booklets**Aim of the lesson:**

One of the benefits of MS Word to make books or booklets is that there are lots of tools for mastering the document, pages are, by default, set up for auto flow. There is no need to connect pages or text boxes. With this lesson students will many additional tools to speed and facilitate their crafts.

Learning objectives:

Main objective of this lesson is about:

- how to make a booklet using Ms Word



Teacher support:

To get the detail on learning objectives, you may follow given sites.

Visit:

<http://pullquote.com/blog/2013-01-20-so-what-is-a-pull-quote>

<http://desktoppub.about.com/od/glossary/g/Pull-Quote.htm>

<https://www.google.com.pk/#q=what+is+a+pull+quote>

<https://www.google.com.pk/#q=what+is+a+pull+quote>

<http://office.microsoft.com/en-001/word-help/insert-headers-and-footers-HP001226486.aspx>

<http://www.ask.com/question/what-are-headers-and-footers-in-ms-word>

Warm-up:

You may ask few questions for their brainstorming like:

- Why making booklet on Word is better than manual?
- What are the important features of MS Word?
- Which tabs and tools do we use to make a document?
- How can we make our documents more attractive?
- Which tools of Word do we mostly use for formatting?
- Can we add shapes, pictures, columns, etc to the document in MS Word?

Discussion:

Students have already learnt about Ms Word, its tools and how to make booklet using MS Word.

Take your students to computer lab, collect material on any topic, e.g on “Blessing of good books”, open MS word and start creating booklet. Follow textbook, Page: 30

Layout designing

Set the margin and color of the page.

Designing the Cover Page

Cover page shows the title of the books, name of its writer, and also it is made attractive for readers.

Add header or footer

A **header** is printed in the top margin to show heading, name of company, level, etc. **Footer** is printed in the bottom margin to show page numbers, or anything that helps reader.

You should write difficult words and terms of the topic on the board. Read aloud the following terms

Let students read the book with more understanding and mark difficult words as well as the key words

Read aloud the following terms:

Keywords	Common words
MS Word	automotive technology
Mastering Word	proceeding booklet
Layout design	to reduce
Cover page	to drag
Pull Quote	diffused
Header & Footer	organization
Final checking	year of publication
	crucial step
	proofreading



Summary:

- Page Layout indicates the margin and pages and background color.
- Cover page reflects title and subtitle of the book
- Pull quote is the tempting or important information about the topic of the page
- Header may include chapter of the book, name of organization, year of publication or anything which helps reader understand the topic
- Footer mostly contains page numbers
- Final checking is the most important practice to ensure the quality of booklet. It rectifies content, structure and formatting errors.

Assessment:

You may ask question related to the concept given in the textbook. Like

- Why cover page of any book have importance?
- What do you understand by layout?
- What you first design, the lay out or the cover page?
- Why we use pull quotes in our documents?
- What is header and footer? Etc.

Assignment:

You may ask your students to:

- Write steps and their description in points for making booklets on Ms Word.

Activity:

Do activity form textbook, **Page no 35**

Helping tools:

As a support material, you should tell them about the information pools.

- **The Net Extra:**

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- **Other links:**

Besides the Net Extra, here we give other sites also which are **educational computer games and activities** for elementary students to learn on the web.

Visit: <http://www.abcya.com/input.html>

Comprehension Assessment (Answers)

1. The cover page is most important because it attracts people to read the content. Its essential element is its title, author, style and color.
2. We can adjust the size of a picture by dragging it from all the sides.
3. A Pull quote is an important and brief about the topic.
4. Header or footer can be used for page numbers, date, title, author name, company name, etc.
5. In final checking any grammar, style, content, spelling, formatting and other errors are removed.



Lesson 6: *Binary numbers: The language of computers*

Aim of the lesson:

Binary system is the language of computer, simplifies information processing. It is the smallest numbering system and computer understands it easily. Aim of this lesson is help students understand the difference between decimal system and binary system and also its advantages.

Learning objectives:

Main objective of this lesson is about:

- What is the language of computer?
- What are binary numbers?
- History of binary number.
- Use of binary numbers.
- How to convert decimal number into binary or binary into decimal?

Teacher support:

To get the detail on learning objectives, you may follow given sites.

Visit: <http://www.technologystudent.com/elect/binary1.htm>
http://www.cuttheknot.org/do_you_know/BinaryHistory.shtml
<http://www.kerryr.net/pioneers/binary.htm>

Warm-up:

You may ask few questions for their brainstorming like:

- Why do we use language?
- How many languages do you know?
- What is the language of a computer you think?

Discussion:

To understand Binary system, students should know why language is important. Tell them language is the way of communication or interaction between two or more people in our everyday lives. We use different languages to communicate e.g. we use sometimes English, sometimes Urdu to teach. The Language Allah used to communicate with His Prophets is Arabic. The selection of language between two people is based on language they know. Similarly computer has its own language. Operating system and Programs communicate each other in Binary numbers. Binary represents two. In Binary system is base 2 system and contains only 0 and 1, which can be added, deleted, subtracted, and multiplied like decimal system, the system of base 10 (0....9)

You should write difficult words and terms of the topic on the board. Read aloud the following terms Let students read the book with more understanding and mark difficult words as well as the key words. Read aloud the following terms:

Keywords	Common Words
Binary system	symbols
Binary numbers	reliable
Decimal numbers	published
Bits and bytes	exclusively
circuitry	charged or discharged
Digital circuit design	affected
Electronic relays	manipulations



Summary:

- Binary system is the system has only two states for representation
- Numbers used in binary system are called binary numbers
- Binary numbers are base 2 system and have only 0 and 1
- Decimal system is base 10 system and have digits from 0-9
- Computer cannot accurately hold more than two states that is why it uses binary system
- Bit is the smallest denotation of binary numbers
- Byte is the group of eight bits
- Any type of information on computer is stored in bits and bytes
- Binary number like decimal number are added, divided, subtracted, and multiplied.

Assessment:

You may ask question related to the concept given in the textbook. Like

- What does binary means?
- What is a bit and byte?
- Who invented the binary numbers?
- What is the name of the computer that calculates the complex calculations?

(Note: there is more to ask)

Assignment:

You may ask your students to:

- Make a note on history of binary numbers

Activity:

Do activity form textbook, **Page no 35**

Helping tools:

As a support material, you should tell them about the information pools.

- **The Net Extra:**

As it has been mentioned, the Net Extra is especially designed for the teachers and the students. Here you can find not only the text material but

also the related information, activities and exercises. You can guide your students to use net extra for more information.

Log on to net extra account at

www.learningwell.pk

- **Other links:**

Besides the Net Extra, here we give other sites also which are **educational computer games and activities** for elementary students to learn on the web.

Visit: <http://www.abcya.com/input.html>

Comprehension Assessment (Answers)

1. 0 1 2 3 4 5
2. Processing in binary language is easier for computer because they are built to understand binary language.
3. 1 step = 1, 2 steps = 10, 3 steps = 100



Lesson 7: Understanding Excel

Start lesson 7 with the understanding of Ms Word and PowerPoint

Aim of the lesson:

The aim of this lesson is to introduce students some of Excel's more powerful features in order to help them make some basic lists.

Learning objectives:

Main objective of this lesson is about:

- Microsoft Excel and its basic tools

Teacher support:

To get the detail on learning objectives, you may follow given sites.

Visit:

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

http://www.baycongroup.com/excel2007/01_excel.htm

<http://www.techterms.com/definition/excel>

Warm-up:

You may ask few questions for their brainstorming like:

Discussion:

Tell your students the main objective of using Excel. How it is different from Word and PowerPoint. Take them to computer lab and open Word, PowerPoint and Excel. Display all three windows and compare.

Tell them, Excel is the Program used to organize data, make tables and do calculations which cannot be done on Word or PowerPoint.

Give them the basic concept of every feature of Excel.

Workbook

Files in Excel are called workbook.

Worksheet

A workbook divided into worksheets

Cell

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.

Cell reference

It tells the location of a cell or group of cells in the worksheet.

Range

A range is a group or block of cells in a worksheet have been selected or highlighted.

Formula

It facilitates the user to for analyzing of data and to make various calculations.

Active Cell, Row and column.

A cell, row and column can be activated by click on it, the border of the cell highlighted

Name Box

It displays the address of the active cell.

Formula Bar

Contains all the applied formula.

Home Tab

Home tab divided into seven sections and has the similar tools as in the Home tabs of Word and Power Point.

Font section

You can change the Font Style, increase and decrease Font Size, make it **bold**, *italic* or *underline*.

Alignment section

Merge and Center is the most common option of this section

Number section

Number section alters the nature and presentation of the data

Cell section

You insert, delete and format the cells from here..

Editing section

Helps in editing

Insert Tab

You can insert tables, pictures, clipart by using this tab.

Charts section

It allows you to show your analysis in different types of charts like pie, bars, line etc.

You should write difficult words and terms of the topic on the board. Read aloud the following terms

Let students read the book with more understanding and mark difficult words as well as the key words.

Keywords	Common Words
MS Excel	onerous
Spreadsheet	groceries
Workbook	purchases
Worksheets	computerized
Rows, Coloumns and Cells	repetitive
Cell reference	grid
Range	analysis of data
Active Cell, Coloumn and Rows	activated
Name box	merging
Formula Bar	currency notation
Interface	

Summary:

- Spreadsheet program is especially designed for calculation. They are used in offices and workplace
- Workbook is the file in Excel which holds data
- Worksheets are the pages of workbook which are 225 in total
- Worksheets comprise of rows and columns represented by the grid
- Columns and rows form boxes, called Cell
- Cell reference is basically the cell address represented by alphabets and numbers in name box
- Range is the collection of Cells for operation
- Formulas analyze the data
- Active Cell, Row and column can be activated by clicking

- Name Box displays the location of the cell
- Formula Bar displays formula applied to a cell and content of that cell
- Excel has almost the same interface as Word and PowerPoint have it
- The most commonly used option is merged and centre
- Number section alters the nature and presentation of the data
- The Cell section is used insert, delete or otherwise format a cell
- Editing section edits the document
- Fill buttons automatically inputs the data in a number of cells
- Sort and filter buttons rearranges the data
- Insert tab inserts various elements in worksheets.

Assessment:

You may ask question related to the concept given in the textbook. Like

- What is the best use of Excel
- Tell the difference between Workbook and worksheets of the Excel?
- How do we represent Rows and Columns?
- What is Cell address?

(Note: there is more to ask)

Assignment:

You may ask your students to:

- Make a time table manually for assessment subject wise.

Activity:

Do activity form textbook, **Page no 45**

Helping tools:

As a support material, you should tell them about the information pools.

- **The Net Extra:**

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also the related information, activities and exercises. You can guide your students to use net extra for more information.

Log on to net extra account at

www.learningwell.pk

- **Other links:**

Besides the Net Extra, here we give other sites also which are **educational computer games and activities** for elementary students to learn on the web.

Visit:

<http://www.abcya.com/input.html>



Comprehension Assessment (Answers)

1. Making a list of groceries, making list of clothes we have to purchase on our events, list of things we have to do daily, etc.
2. Every cell has a reference that shows the row and column of the cell.
3. Formula facilitates calculation automatically and we just have to change the values.
4. Nature shows the raw material data, but in presentation we arrange data in a meaningful order in rows, columns and charts to present it.
5. Rearranging data helps in quick analysis and we can find our answers at a glance

Lesson 8: Working with Excel

Aim of the lesson:

The aim of this lesson is to practice Excel and understand the importance of excel in our every day life.

Learning objectives:

Main objective of this lesson is about:

- Calculation in Excel
- Creating and managing reports

Teacher support:

To get the detail on learning objectives, you may follow given sites.

Visit:

<http://office.microsoft.com/en-001/excel-help/freeze-or-lock-rows-and-columns-HP001217048.aspx>

Warm-up:

You may ask few questions for their brainstorming like:

- Why do we need Excel?
- What features make it different from Word and PowerPoint?
- If you want to organize large data, which MS program will you prefer?

Discussion:

Take your students to the lab. Here the aim of the Excel is to learn basic tools of calculation on excel. It starts with the addition of data, managing it by labeling. Tell them why labeling is important. Also tell them how to accommodate the text in the cell.

For Addition, Subtraction, Division and Multiplication, they should know DMAS manually too. On Excel formula starts with "is equals to".

=SUM (cell reference1, cell refernce2, cell reference10) enter

Formula is applied to one cell and by dragging it to other give the results for every data. Help them make Expense report, using formula for DMAS.

Formatting is the last step of any report. You can



- Merge & Center the text
 - Bold, change Font size
 - Change the column width
 - Fill the color in selected area.
 - Use Freeze Panes option(to lock specific rows or columns in one area)
- (Follow the book correctly)**

You should write difficult words and terms of the topic on the board. Read aloud the following terms
Let students read the book with more understanding and mark difficult words as well as the key words.

Keywords	Common Words
Excel	remedy
Data entry	widens
Expense Report	accommodate
Freeze panes	incurred
Cell reference	siblings

Summary:

- Excel is used for calculations
- Its starts with Data labeling
- Heights and width of the cell can be changed by dragging the lines or typing
- We add single data in single cell
- We can add, subtract, divide and multiply in Excel using cell references
- In any cell reference we can apply formula or it can written on formula bar
- Dragging is also used for copying the data
- Notes can also be written in text boxes
- Freezing panes are used to fix the heading. It can be applied to rows as well as columns.

Assessment:

You may ask question related to the concept given in the textbook. Like

- How many tasks we learnt in this chapter?
- Which sign have to put before writing any formula?
- Why we use Freeze Panes

(Note: there is more to ask)

Assignment:

You may ask your students to:

- Make a time table manually for assessment subject wise.

Activity:

Do activity form textbook, **Page no 53**

Helping tools:

As a support material, you should tell them about the information pools.

- **The Net Extra:**

As it has been mentioned, the Net Extra is especially designed for the teachers and the students. Here you can find not only the text



material but

also the related information, activities and exercises. You can guide your students to use net extra for more information.

Log on to net extra account at

www.learningwell.pk

- **Other links:**

Besides the Net Extra, here we give other sites also which are **educational computer games and activities** for elementary students to learn on the web.

Visit: <http://www.abcya.com/input.html>

Comprehension Assessment (Answers)

1. To identify a column of data we label the data.
2. Cell reference is the cell address to identify and locate the cell quickly.
3. We must only use predefined functions in formula, because excel understands those functions only.
4. Yes the result will be correct.
5. We can widen the column by:
 - Double-click the column border
 - Drag the column border
 - Set a specific column size

Lesson 9: **Routine problems: Data loss and Hard disk full**

Aim of the lesson:

This lesson focuses on routines problems related to Data loss and their solution. Previously students have learnt how to manage computer and to deal with the problems associated with the inactivity of hardware.

Learning objectives:

Main objective of this lesson is about:

- Causes of data loss
- Importance of making backup.
- Data archiving.
- Data compression
- Types of data compression

Teacher support:

To get the detail on learning objectives, you may follow given sites.

Visit:

<http://searchstorage.techtarget.com/definition/compression>

[http://msdn.microsoft.com/en-us/library/windows/desktop/aa364219\(v=vs.85\).aspx](http://msdn.microsoft.com/en-us/library/windows/desktop/aa364219(v=vs.85).aspx)



Warm-up:

You may ask few questions for their brainstorming like:

- Do you face the problem of data loss?
- If you have very important assignments in your computer and files gets corrupt and you lose your data, what will you want to do next time to recover?
- What had happen if there is sudden power failure of computer?

Discussion:

Students have learnt in previous lesson what routine problem they face while using computer. Sometimes hardware problem, connection problem, sometimes windows freezes, and sometimes virus attacks. In this lesson they will know some more routine problems and their solutions. Take them to computer lab and tell them the procedure to fix the problems. For instance, **Data loss** is the loss of information by power failure, hardware failures, virus or sometime no apparent reason. A *backup* simple solution for this. Making one or more exact copies of your *data* in a separate place on computer. Skydrive is the online backup (cloud computing class 4) (See textbook, Page 54)

We also face other problems also like,

Hard disk full

Archiving the solution for hard disc full.

Data Archiving

Data archiving is the process of moving data that is no longer actively used to a separate data storage device for long-term retention

Data Compression

It is a process in which the size of data is reduces through mathematical methods. It could be of two types.

1. Lossy : Some information is permanently lost
2. Lossless: All information can be restored).

You should write difficult words and terms of the topic on the board. Read aloud the following terms Let students read the book with more understanding and mark difficult words as well as the key words.

Keywords	Common Words
Hard disk crashing	data accumulation
File corruption	frequent duplication
Backup	non-core information
Hard disk partition	repetitive data
Cloud-based backup	run-length encoding
Skydrive	source codes
Box.net	executable
Uploading files	concise
Downloading files	uncompressed folder
Skydrive	
synchronization	
Data compression	
Data archive	

Summary:

- Data loss and hard disk full is routine problem of computer
- Data loss is sometimes due to hard disk crashing, file corruption, viral attack and sometimes due to no apparent reasons

- Backup of files or data is best way to deal with this problem
- Data is kept sometimes in separate partition of hard disk or online in cloud-based backup
- Backup in hard disk partition is not so reliable as Cloud-based system
- Dropbox, Box.net and Skydrive are the most famous examples of online backup
- Archiving is the process to save data in compressed form
- Lossy compression is used in situations where data accuracy can be compromised to a certain level
- Lossless compression compress the data without any data loss
- WinRAR is the compression Software, allows creation of data archives in compressed forms. These can be uncompressed or extracted using the same Software

Assessment:

You may ask question related to the concept given in the textbook. Like

- What are the reasons of data loss?
- What is backup?
- What is the importance of backup?
- How can we make online backup?
- What do you understand by data archiving?
- Define data compression?

(Note: there is more to ask)

Assignment:

You may ask your students to:

- Make flash cards for routine problems and solutions at the back.

Activity:

Do activity form textbook, **Page no 59**

Helping tools:

As a support material, you should tell them about the information pools.

- **The Net Extra:**

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Log on to net extra account at

www.learningwell.pk

- **Other links:**

Besides the Net Extra, here we give other sites also which are **educational computer games and activities** for elementary students to learn on the web.

Visit: <http://www.abcya.com/input.html>



Comprehension Assessment (Answers)

1. If we don't create backup of data, we may lose it permanently.
2. Regular backup is important because if accidentally we lose data, we can regain it from the backup.
3. Saving our data in Sky Drive is better than saving it in a hard disk, because it is more reliable than hard disk and we can access it from anywhere in the
4. Image on page# 57 will compress more data, because it uses lossy compression method.
5. Yes we can archive a file without compression but it will use more space as it stores all files individually without being compressed.

Lesson 10: The living net: Search engines**Aim of the lesson:**

This lesson focuses on the importance of search engines and the steps followed by them in finding answers of required queries.

Learning objectives:

Main objective of this lesson is about:

- Search engines.
- Web crawlers
- Indexing etc.

Teacher support:

To get the detail on learning objectives, you may follow given sites.

Visit:

- <http://www.computerhope.com/jargon/s/searengi.htm>
- <http://searchsoa.techtarget.com/definition/search-engine>
- <http://searchsoa.techtarget.com/definition/search-engine>
- <http://www.merriam-webster.com/dictionary/search%20engine>
- <http://www.synase.com/FAQWhatIsAnIndex.jsp>

Warm-up:

You may ask few questions for their brainstorming like:

- Do you visit any website?
- What is essential to go to a website?
- Which type sites you visited most?

Discussion:

Students have learnt about search engine in previous grade. They know why search engines are used for as the name shows. In this lesson they will know "How these search engines performs". Take students to the lab and show every step. Tell them:

Search Engine

A search engine is an online program that searches documents and files what you are looking for on net, web. It follows **web crawling**, **Indexing** and **searching**.



Web crawling is the process by which search engines gather pages from the different links

Indexing is a process of ranking the search result.

To make searching more specific, (minus, plus and quotation marks are mostly used in a search statement without giving any gap. E.g. **hot drinks+coffee-tea**

You should write difficult words and terms of the topic on the board. Read aloud the following terms

Let students read the book with more understanding and mark difficult words as well as the key words.

Keywords	Common Words
Search engine	relevant web pages
Online application	trivial ways
SERPs	periodically
Query box	authoritative
Web crawling	catalogues
Indexing	prominence
URL	
Search engine central	
Page rank depository	
crawlers,bots,spifders	

Summary:

- Search engines are used to find out WebPages we ask for
- Search engine is an online application for searching
- It generates SERPs after searching
- Search engines use automated software (crawlers, bots, spiders) for searching
- Search engines follows three steps in searching; crawling, indexing and searching
- Indexing is the process of ranking the search results
- The five most famous search engines are Google, Baidu, Yahoo, Yandex and Bing
- Results of search engine is mostly based on ranking according to the amount of traffic for required topic
- To specify the search, we add punctuation marks.

Assessment:

You may ask question related to the concept given in the textbook. Like

- What is search engine?
- How many types of automated software for search engines?
- What are the steps of searching followed by search engine?
- When was the first search engine introduced?

(Note: there is more to ask)

Assignment:

You may ask your students to:

Search history of search engines, importance of search engines and the steps followed by search engines.

Activity:

Do activity form textbook, **Page no 65**

Helping tools:

As a support material, you should tell them about the information pools.

- **The Net Extra:**

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Log on to net extra account at

www.learningwell.pk

- **Other links:**

Besides the Net Extra, here we give other sites also which are **educational computer games and activities** for elementary students to learn on the web.

Visit: <http://www.abcya.com/input.html>

Comprehension Assessment (Answers)

1. It is important for the search engine to note the location of the word on webpage so that it can rank it according to its importance.
2. Best ever School's Annual Function.
3. Google search is the literal search, which gives multiple unwanted results.
4. Pakistani mangoes+Chaunsa, Sindhri and Tota Pari

Lesson 11: Blogosphere: The world of Blogging**Aim of the lesson:**

In this establishing and growing world, blogs are the medium to publish our own creation. Our blog is our own newspaper, where we are the writers and we are the publishers. Aim of this lesson is reveal the importance of blogging.

Learning objectives:

Main objective of this lesson is about:

- Bulletin Boards (BBs)
- Blog and blogging, and
- Types of blogs.

Teacher support:

To get the detail on learning objectives, you may follow given sites.

Visit: <http://www.blogtechnika.com/what-is-the-aim-of-blogging/>
[https://codex.wordpress.org/Introduction to Blogging](https://codex.wordpress.org/Introduction_to_Blogging)



Warm-up:

You may ask few questions for their brainstorming like:

- Do your elders use Twitter or Facebook?
- Can you discuss anything on Facebook or Twitter with your friends?
- What is displayed mostly on Notice board in your school?

Discussion:

Tell your students the difficulties a writer face to publish his work, in terms of some conditions, cash investment, and other hurdles. Tell them how blogging has made it easier for everyone to share his thoughts to the world without facing any hindrances by the publishers.

You should know that Blogs are effective tools for improvising kids language arts skills, and encouraging them to express their opinions. Students blogs are the platform where classroom technology, teaching, creativity, art, etc and the internet meet. They may also provide virtual workplace for students to learn technological world.

Take students to the lab and show different blogs, their features and show how they are different, then explain,

Bulletin boards were for sharing your ideas online.

Blog

It is the form of BBs advanced by addition of comments and discussion facility, other links to a post, and contents availability to users by emails.

There are many types blogs like

- **Personal blog:**
It is run by individual who shares his own experience and knowledge.
- **Corporate blog:**
It is run by organization, corporation, etc. for the official communication.(students should what is corporation)
- **Microblog:**
As the name shows, it is comprises of small pieces of text, quick to read.
- **Video blog**
It consists of videos. VBloggers demonstrate step by step through videos.
- **Photoblog :**
It is composed of photos. Professional and amateurs use these blogs to showcase their photography skills.
- **Blogosphere:**
It is an interconnected blogs on the Internet.

You should write difficult words and terms of the topic on the board. Read aloud the following terms

Keywords	Common Words
BBs	revolutionized
Blog, Blogosphere	extensive technical
Personal Blog	functionalities
Corporate Blog	
Microblog, Videoblog	
Photoblog, Blogging	
Plaforms,	
Content manager	
Comment manager	
Administration	

Summary:

- Blog is the form of social media where people discuss and comments on any content. Contents are arranged chronologically, updated regularly and also available to users via emails.
- Logging is the easiest way to publish our work without any hindrances and restrictions by publishing industries
- Bulletin Boards were just like notice board where only information was shared
- Blogosphere represents entire blogging community
- There are many types of blogs depends on nature of contents and their presentation
- Personal blog is run by an individual where only person experience and knowledge is shared
- Corporate Blog is run by a company or official communication
- Microblog consists of only small piece of information or review
- Videoblog facilitates demonstration by videos
- Photoblog facilitates photography
- Modern blogging software and content management system has made blogging easy for common man

Assessment:

You may ask question related to the concept given in the textbook. Like

(Note: there is more to ask)

Assignment:

You may ask your students to:

Make a note on Blogging and its advantages

Activity:

Do activity form textbook, **Page no71**

Helping tools:

As a support material, you should tell them about the information pools.

- **The Net Extra:**

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also the related information, activities and exercises. You can guide your students to use net extra for more information.

Log on to net extra account at

www.learningwell.pk

- **Other links:**

Besides the Net Extra, here we give other sites also which are **educational computer games and activities** for elementary students to learn on the web.

Visit: <http://www.abcya.com/input.html>



Comprehension Assessment (Answers)

1. Paper based publication has many steps from content development to production which is very expensive too. Blogging has made publishing easy for a common man where there are no restrictions and other expenses.
2. Bulletin Boards didn't provide discussion forum to the readers that's why they have been replaced by Blogs.
3. A personal blog usually records the experiences and knowledge of a person rather than a group that is why it is biased.
4. A micro bloggers sent messages from different sources including cell phone text messages, email, and instant messages or through a website including pictures and sounds also.
5. Blogging is an important social media in which people discuss and debate upon variety of topics, facts and figures and exchange their views. Blogging platform requires content management system called blog software which manages content editing, comments, and administration.

Lesson 12: The coming revolution: continuous body monitoring**Aim of the lesson:**

The aim of this lesson is to educate the students that what is continuous body monitoring and what is the importance of CBM in the modern world.

Learning objectives:

Main objective of this lesson is about:

Teacher support:

To get the detail on learning objectives, you may follow given sites.

Visit:

<http://www.popsci.com/science/article/2011-08/epidermal-electronics-paste->
<http://www.technologyreview.com/news/512061/electronic-sensors-printed-directly-on-the-skin/>

Warm-up:

You may ask few questions for their brainstorming like:

Discussion:

At this stage student know the computer revolutions, their generations and every generation has drastic advancement. Revise the generations of computer and also Cloud technology and the fifth generation.

While telling them CBM, tell them the need of it. What problems their family face when get ill, what cost they bear during medical testings etc.

Continuous body monitoring (CBM) is the facility which will keep the individual's health under observation without visiting hospital and paying for tests, with the help of Epidermal computers and Cloud. Cloud technology students know, epiderm is the scientific term for skin, and Epidermal computers will be the printed electronic circuits and fit on the skin like a "temporary tattoo"



See book page:72

You should write difficult words and terms of the topic on the board. Read aloud the following terms

Let students read the book with more understanding and mark difficult words as well as the key words.

Keywords	Common Words
CBM	prescription
Epidermal computers	assessment
Conventional sensors	worsen
Non-intrusive	variability
wireless	inadequate
Diagnosis and therapies	unprecedented levels
Printing electronic circuits	parameters
Nanotechnology	spray-on bandages
Embedded device	
Cardiac illnesses	
physiology	

Summary:

- CBM will be considered the revolution in the history of computers
- CBM provides the report of any ailment in the body
- For the success of CBM, *epidermal computers* and the Cloud are required.
- CBM will also monitor a patient's pulse rate, blood pressure and heart beats
- Epidermal computers are the skin computers in the form of printed electronic circuits.
- Epidermal computers are wearable and portable computers
- Virtual doctors will prescribe medicines for everyday ailments having reports from Cloud.
- CBM will be of very low cost. It will not need tests done, their fee, consultancy fee and the transportation costs.

Assessment:

You may ask question related to the concept given in the textbook. Like

- Why is there need of many tests in an illness?
- What is CBM?
- What is the advantage of CBM?
- Why is the computer used in CBM called epidermal?
- What is the role of Cloud in CBM?

(Note: there is more to ask)

Assignment:

You may ask your students to:

Make a summary on CBM, its need and advantages and take the print on A4.

Activity:

Do activity form textbook, **Page no76**

Helping tools:

As a support material, you should tell them about the information pools.

- **The Net Extra:**

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also the related information, activities and exercises. You can guide your students to use net extra for more information.

Log on to net extra account at

www.learningwell.pk

- **Other links:**

Besides the Net Extra, here we give other sites also which are **educational computer games and activities** for elementary students to learn on the web.

Visit: <http://www.abcya.com/input.html>

Comprehension Assessment (Answers)

1. Continuous Body Monitoring (CBM) brings revolution in healthcare by monitoring any type of illness in body by using Epidermal computers and cloud.
2. Cloud will store the information from epidermal computers and from there a health specialist can see the report and prescribe the required medicines. devices to a cloud computing network, and a veritable revolution in health affairs ensues.
3. CBM can never deal with nervous system accurately.
4. CBM enables unprecedented levels of understanding of disease progression resulting in better diagnosis and therapies. CBM will be able to gather vital information about a patient's heart rate, blood pressure and pulse etc.

