SHREE H.N.SHUKLA GROUP OF B.ED. COLLEGES

(Affiliated To Saurashtra University & NCTE)
(Vaishali Nagar 2 & 3, Near Amrapali Under Bridge ,Rajkot)

EPC-8 ICT AND ADVANCE PEDAGOGY

Unit-1 Introduction to ICT and Computers

1.1 Concept, uses and limitations of ICT and computers
1.2 MS Word (Introduction, Usage) Activity - Basic functions like typing, formatting. font setting, paragraphing, minimum version 2007, and introduction to Google docs
1.3 MS Excel (Introduction, Usage) Activity - Creating results with formulas, creating timetable, basic functions like cell formatting, minimum version 2007, and introduction to Google sheet
1.4 MS PowerPoint (Introduction and Usage) - Creating, designing and animating slides by inserting words, pictures, audio and video, minimum version 2007, and introduction to Google slides

Unit-2 Introduction to Internet and Teaching-Learning Tools

2.1 Internet, email and blogs meaning, introduction, utility
2.2 Introduction to Online Teacher Support Tools: Google Classroom, Microsoft Teams, Google Meet, Chat GPT
2.3 Introduction to Online Learning Platforms. SWAYAM, DIKSHA, NROER
2.4 Introduction to Different methods of Google Search, Hacking, Copyright Infringement and Plagiarism

Unit-3 Introduction to Advanced Pedagogy

3.1 Advanced - Pedagogy Meaning. Principles, Need
3.2 Integrated Pedagogy and STEAM Education. Concept and Introduction
3.3 The 5E Model: Steps and Teacher's Role
3.4 Reflective Learning Concept, Gibbs' Cycle and Teacher's Role

Unit-4 Trends of Advanced Pedagogy

4.1 Blended Learning Concept, forms, Role of Teacher

4.2 Modern Techniques of Assessment: Concept and Introduction: [Quiz (Google form), Games(Kahoot), Student Response System (Mentimeter), Peer Review]
4.3 Digital Portfolio: Concept, Types, Advantages, Limitations
4:4 Concept Map: concept, types and importance of education

UNIT : 1INTRODUCTION TO ICT AND COMPUTERS

1.1. Computersbasic

∨ Introduction:

- Computerisanelectronicdevice.
- It can do arithmetic calculations faster.
- For a common man computer is simplyacalculator,whichworks automatic and quite fast.
- Forapersonwhoknowsmuchaboutit,computerisamachinecapableofsolving problems and manipulating data.
- Itacceptsdata,processesthedatabydoingsomemathematicalandlogical operations and gives us the desired output.
- Therefore,wemaydefinecomputerasadevicethattransformsdata.
- Datacanbeanythinglikemarksobtainedbyyouinvarioussubjects.
- Itcanalsobename,age,sex,weight,height,etc.ofallthestudentsinyourclass or income, savings, investments, etc., of a country.
- Computercanbedefinedintermsofitsfunctions.It can

- accept data
- storedata
- processdataasdesired
- retrievethestoreddataasandwhenrequired
- printtheresultindesiredformat

- Wecandefineacomputeras,***"Acomputerisamachineordevicethatperforms processes calculations & operations based on instructions provided by a software or hardware program."***

∨ Characteristicsofcomputer:

- Speed
- Accuracy
- Diligence
- Versatility
- Powerof remembering
- Storage

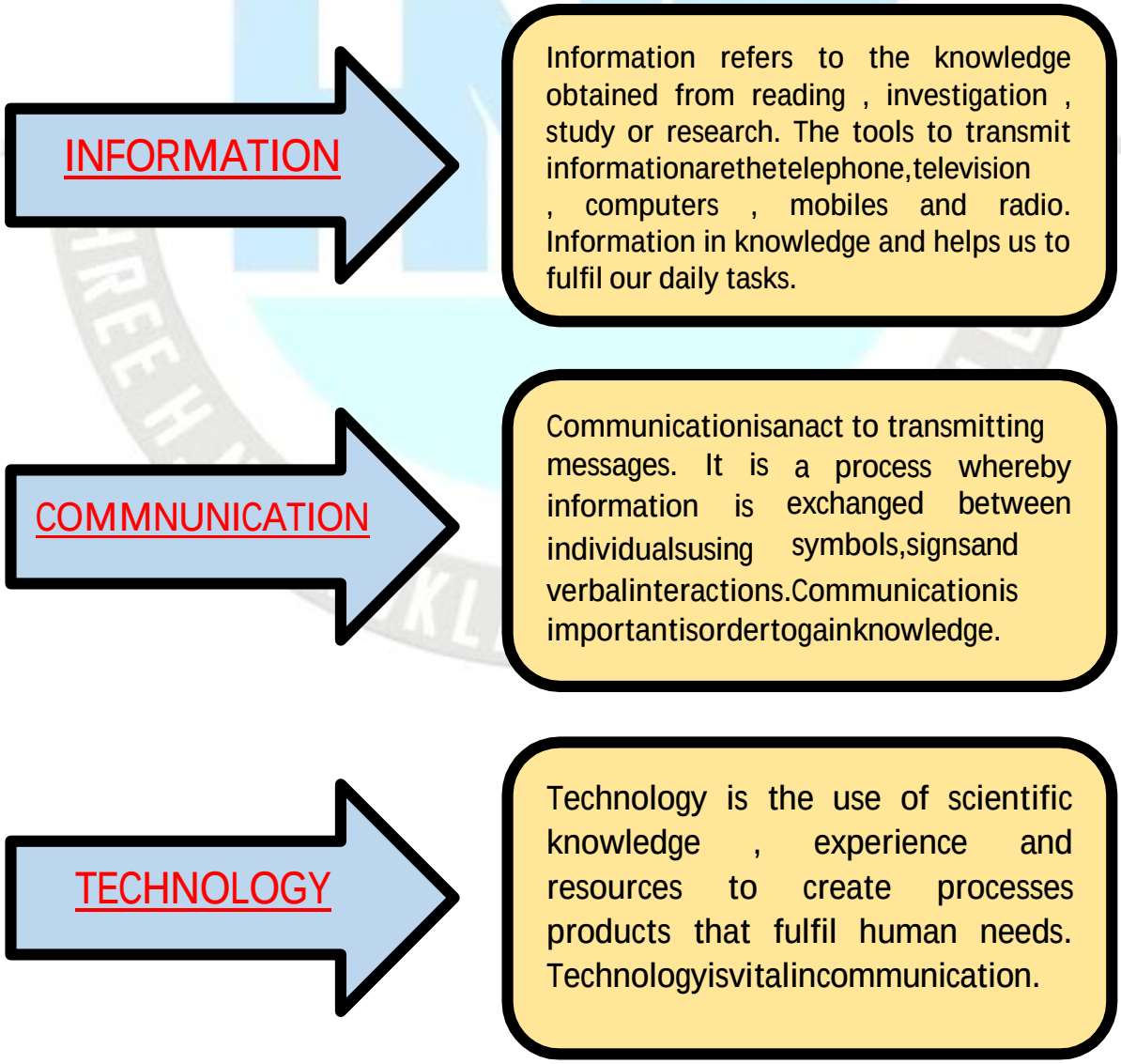
∨ Usesofcomputer:

Commerceandindustry	Inthefieldofmedicaland treatment
Inthefieldof education	Inthefieldof transportation andtraffic
Onlinegames	Onlineshopping
Chatting&SocialMedia	Onlineexamination
Transportation	Banking

Inthefieldof science andtechnology	Internetonlinefacilities
Entertainment	Marketing

1.1.ConceptofICT

- ICTstandsfor"InformationandCommunicationTechnologies."
- LetsfocusonthethreewordsbehindICT:
  - ü INFORMATION
  - ü COMMUNICATION
  - ü TECHNOLOGY



- ICT refers to technologies that provide access to information through telecommunications.
- It is similar to Information Technology (IT), but focuses primarily on communication technologies.
- This includes the Internet, wireless networks, cell phones, and other communication mediums.
- Inthepastfewdecades,informationandcommunicationtechnologieshave provided society with a vast array of new communication capabilities.
- Forexample,peoplecancommunicateinreal-timewithothersindifferent countries using technologies such as instant messaging, voice over IP (VoIP), and video-conferencing.

- Social networking websites like Facebook allow users from all over the world to remain in contact and communicate on a regular basis.
- Modern information and communication technologies have created a "global village," in which people can communicate with others across the world as if they were living next door.
- For this reason, ICT is often studied in the context of how modern communication technologies affect society.
- Information and communication technology (ICT) is defined as the combination of informatics technology with other, related technologies, specifically communication technology.
- ThedefinitionofICTimpliesthatICTwillbeused,applied,andintegrated in activities of working and learning on the basis of conceptual understanding and methods of informatics.

∨ ICTinonlineteachingandlearning:

- In the era of Knowledge-based society, technical education has assumed an indisputable significant role.
- The new developments in information technologies have an opened-up fresh perspectives in teaching and learning.
- TheICTenabledmethodsshallhelptheteacherstoofferqualitye-content; for both - education in classroom situation and to a large number of populationsinastructured,flexible,interactive,blended,flippedandopen way.
- This course on 'ICT in Teaching and Learning' shall enable the teachers' to select and integrate ethically appropriate ICT pedagogy in teaching-Learning processes in Teacher and Learner Directed Learning environment.
- Explore the emerging trends in Open Educational Resources (OER), Learning Management System (LMS) platforms for developing Small Private Open Learning (SPOCs) and Massive Open Online Learning Courses (MOOCs), aspects of Mobile learning.
- This course is aimed at building the capacity of aspiring teachers and in-service teachers like you, for transforming the educational culture and teaching-learning system of Institution.
- With the phenomenal explosion of knowledge and application of information-cum-communication technologies (ICT) have further accelerated the structured access to learning material.
- The new developments in information technologies have opened-up fresh prospective in teaching and learning.
- Education for all is far from being achieved in any reasonable timeframe using traditional classroom methods.

- There is now widespread recognition that the way forward is to make

greater use of ICT, whether in the form of classroom technology, computer-based learning, web-based learning, video demonstration, simulations, e-books, web-cast lectures, Virtual Labs, MOOCs.

- These ICT enabled methods helps the teachers to offer quality e-content; both education in classroomsituation andto alargenumber ofpopulation in a structured, flexible, interactive, blended and open way.
- SchoolsuseadiversesetofICTtoolstocommunicate,create,disseminate, store, and manage information.
- In some contexts, ICT has also become integral to the teaching-learning interaction, through such approaches as replacing chalkboards with interactive digital whiteboards, using students' own smartphones or other devices for learning during class time, and the "flipped classroom" model wherestudentswatchlecturesathomeonthecomputeranduseclassroom time for more interactive exercises.
- When teachers are digitally literate and trained to use ICT, these approaches can lead to higher order thinking skills, provide creative and individualized options for students to express their understandings, and leave students better prepared to deal with ongoing technological change in society and the workplace.
- ICT issues planners must consider include: considering the total cost-benefit equation, supplying and maintaining the requisite infrastructure, and ensuring investments are matched with teacher support and other policies aimed at effective ICT use.

∨ MaterialsthatcanbeusedtointegrateICTintoteachingandlearning:

- PowerPointpresentations
- Simulations
- Digitalstories
- Digital Puzzles

- Interactivequizzes
- Onlinegames
- Videos
- Interactiveexercises
- Audio Stories
- Blogsandwebsitesonspecifictopics

v ICTskillsforteacherinreferencetoE–Learning:

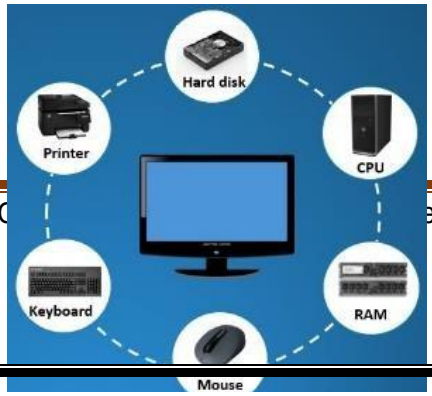
ü LearnMSoffice:

- As a teacher , you need to have word processing skill , data management skill , presentation skill , spreadsheetskills,etc.forwhichtheteachermust learn MS office andvarious features and facilities provided there in.

ü WebNavigationSkill:

- As a teacher , he / she must know what are browsers , search engines , hyperlinks , portraits , etc.
- The teacher should be able to search relevant information from internet.
- Hence,browsingskillsareveryessential.

ü Knowhardware:



- The teacher should be able to use different equipment.
- Computer,mouse,CPU,keyboard,printer,

scanner , etc. are basic hardware tools.

- The teacher should know how to use smartphones , tablets , etc.

ü Filemanagementskills:

- The teacher must know how to prepare different types of files like .docx file , .pptx file , .xlsx file , pdf files , jpeg , jpg , png , gif files , etc.
- The teacher must know how to keep and retrieve them when needed.

ü Evaluationskill:

- Evaluation includes designing question bank , question paper , etc.
- Theteachermustknowdifferent toolsavailableonlineandoffline for evaluation.

ü Collaborationskills:

- Itiscalledteamwork.
- The teacher must be able to collaborate with his / her fellow teachers by making effective use of technology.

ü Bevirtuallyconnected:

- Stay e - connected using tools like WhatsApp , Facebook , email , and zoom to chat with authorities , parents and students,anduseprogramslike googledrivetocollaboratewith remote colleagues.

ü Internetsafety:

- Asateacher,he/shehavetoprotecttheirstudents from malicious activities on the internet.
- The teacher must know the use of antivirus , firewall and other security measures while using internet.

1.2.,1.3.,1.4. Introduction to Microsoft Office

∨ Introduction:

- MicrosoftOffice,ismorecommonlycalledasMS Office.
- MicrosoftOfficeisacollectionofoffice-relatedapplications.
- It was first announced by Bill Gates on August 1, 1988, at COMDEX in Las Vegas.
- Basicallyitisanofficesuiteofvariousapplications,serversandservices.
- In the initial version there were only Microsoft Word, Excel and PowerPoint.
- Laterithasgrownsubstantiallywithmanysharedfeaturessuchascommon spell checker, OLE data integration and visual basic for application scripting language.
- Each application serves a unique purpose and offers a specific service to its users.
- Forexample,MicrosoftWordisusedtocreatedocuments.
- MicrosoftPowerPointisusedtocreatepresentationsusingslides.
- MicrosoftOutlookisusedtomanageemailand calendars.
- Because there are so many applications to choose from, and because not everyuserneedsallofthem,Microsoftgroupstheapplicationstogetherin collections called suites.
- There's a suite of applications for students, a suite for home and small business users, and a suite for large corporations.
- There's even a suite for schools. Each of these suites is priced based on what's included in it.
- Italsofunctionsasadevelopmentplatformforlineofbusinesssoftware.
- MS Office helps simplify basic office tasks and improve work

productivity.

- Each application is designed to address specific tasks, such as word processing, data management, making presentations and organizing emails.
- Different versions of Microsoft office have been introduced keeping in mind the different users and working environments.
- Themostpopularandwidelyusedoneamongthemisthedesktopversion.
- It is available for computers running on Windows and Mac OS operating systems.
- Apart from this Microsoft has a Mobile Office, free-to-use versions of office applications for mobile phones and Office online a web based version of office apps.
- Microsoft Office 2019 is the current version of Microsoft Office, a productivity suite, succeeding Office 2016.
- It was releasedtogeneral availabilityfor Windows 10 and formac OS on September 24, 2018

∨ ApplicationsofMSoffice:

NameofApplication	Logo	File Extension
MicrosoftWord		.docx
MicrosoftPowerPoint		.pptx
MicrosoftExcel		.xlsx

MicrosoftOneNote		.one
MicrosoftOutlook		.msg(Emailformat) .ics(icalenderformat)
MicrosoftPublisher		.pub
MicrosoftAccess		.mdb .accdb
Skypefor Business		~

Each ofthe applications in Microsoft Office serves asspecificknowledge or office domain such as:

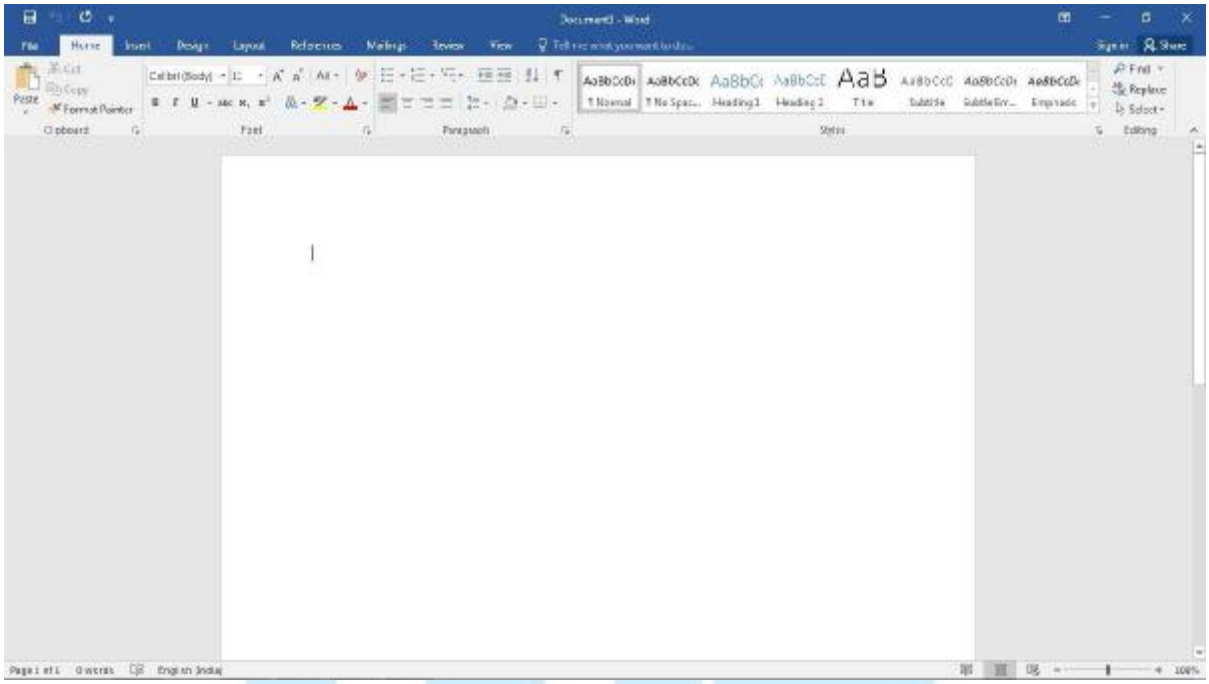
- **MicrosoftWord:**Helpsusersincreatingtextdocuments.
- **MicrosoftExcel:**Createssimpletocomplexdata/numericalspreadsheets.
- **MicrosoftPowerPoint:**Stand-aloneapplicationforcreatingprofessional multimedia presentations.
- **MicrosoftAccess:**Databasemanagementapplication.
- **MicrosoftPublisher:**Introductoryapplicationforcreatingandpublishing marketing materials.
- **Microsoft OneNote :**Alternate to a paper notebook, it enables an user to neatly organize their notes.

∨ IntroductionofMSWord:

- MSWordisthemostpopularwordprocessingsoftwareused today.
- A word processor is essentially a computerized version of the standard typewriter.
- However,thecomputeraddsfeaturestypewritersneverdreamedofhaving like spell check, the ability to save and store documents, copy and past functions, the ability to add images and shapes to documents, and many more.
- Whenattachedtoanemail,electronicdocuments,createdbyMSWordcan be delivered in seconds. Another benefit is that it helps the user to type faster and more accurate.
- This software is used to create, edit, and format written documents in the workplace, at school, and at home.
- Examples include personal and formal business letters, resumes, coversheets, and homework. Intermediate and advanced level knowledge of this software could lead to job opportunities since MS Word is used a lot in the workplace.

v AboutMSWord:

- Here,let'sunderstandaboutthehomescreenofMSword.
- **Homescreen**



- **TitleBar**whichcontainsthenameoffile

- **MenuBar**whichcontainsdifferentmenusfordifferentlayoutstofile

- **FormattingBar**toformatthetextwritteninthefilelikefonts,size, colour , alignments , etc.

- FeaturesofMSword:

- DifferenttypeofdocumentscanbemadeusingMSwordlikeresume, resignation letter , student's material , question paper , bio-data , etc.

- WecanmodifythetextwritteninMSword.
- We can give the text different style, different colors , different size and many more effects.
- Sequentialformatcanbewrittenusingbulletsandnumbers.
- If there is an information in tabular form , then one can create table of his / her own choice.
- DifferentpicturescanalsobeaddedinMS word.
- Pagecanbedesignedaccordingtoourchoiceliketogiveborders,watermark, header , footer , page size , orientation , etc.
- Mailmergefacilityisalsoprovidedforprintinginformationofthesametypeof letter at different address.
- The text can be written in the form of the text which is written in magazines in two columns.
- Faxande-mailmessagecanbesentdirectlythroughtheinternettoprepare.
- Ifsametypeofspellingsarewritteninwrongway,thenonecanreplaceitwith original spelling using replace function.
- Changingthesizeofthemarginscanreformatcompletedocumentorpartoftext.
- Textcanbeformattedincolumnarstyleasweseeinthenewspaper.Textboxes can be made.
- Tablescanbemadeandincludedinthetext.
- Word alsoallows the user to mix the graphicalpictureswiththe text. Graphical picturescaneitherbecreatedinworditselforcanbeimportedfromoutsidelike from Clip Art Gallery.
- Word also has the facility of macros. Macros can be either attached to some function/special keys or to a tool bar or to a menu.
- Italsoprovidesonlinehelpofanyoption.

∨ IntroductionofMSExcel:

- MicrosoftExcelisaspreadsheetprogramthatisusedtorecordandanalyse numerical data.
- WecanuseMSexcelinmanybusinesstasks,includingstatistics,finance, data management, in education for marks entry, attendance, forecasting, analysis, inventory, billing, and business intelligence.
- Also, you can use Excel to enter all sorts of data and perform financial, mathematical or statistical calculations.
- Followingarethefewthingswhichitcandoforyou:
  - ü NumberCrunching
  - ü ChartsandGraphs
  - ü StoreandImportData
  - ü ManipulatingText
  - ü Templates/Dashboards
  - ü AutomationofTasks

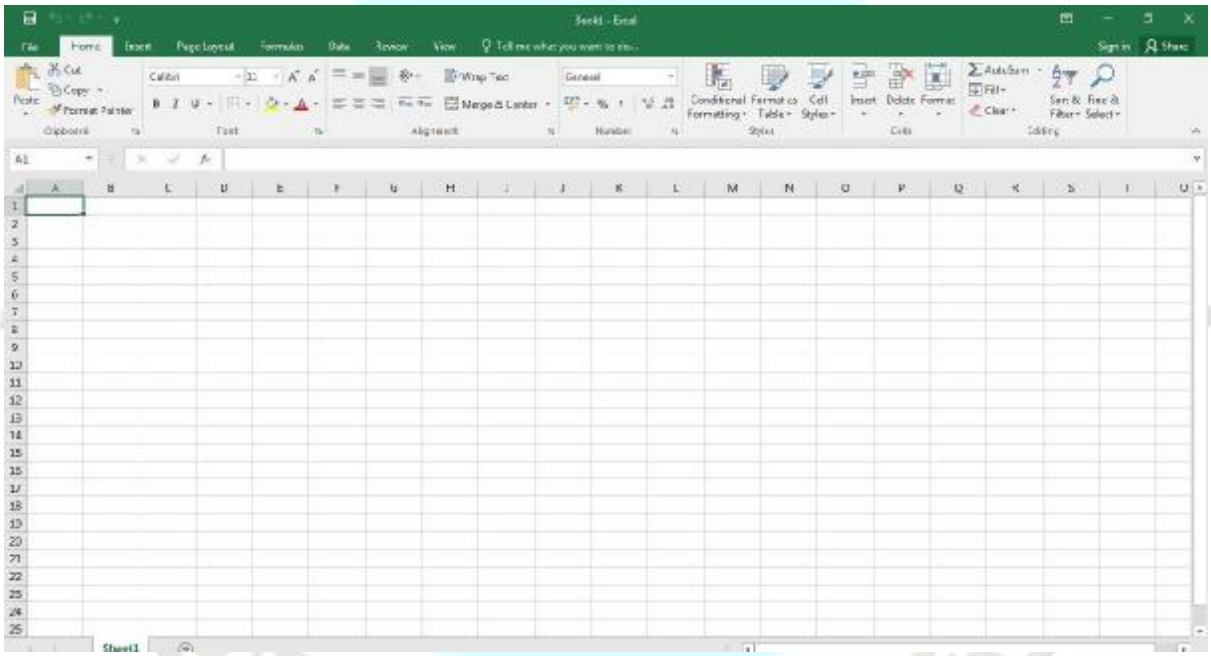
∨ HistoryofMSExcel:

- MicrosoftExcelhasbeenaroundsince1982,firstintroducedasMultiplan, a very popular CP/M (Control Program for Microcomputers), but lost popularity on MS-DOS systems to Lotus 1-2-3.
- In1987,MicrosoftintroducedExcelv2.0forWindowsandby1988began to outsell Lotus 1-2-3 and the emerging QuatroPro.
- In1993,MicrosoftreleasedExcelv5.0forWindowswhichincludedVBA (Visual Basic for Applications), aka Macros.

- This opened up almost unlimited possibilities in automation of repetitive tasks for crunching numbers, process automation, and presenting data for businesses.

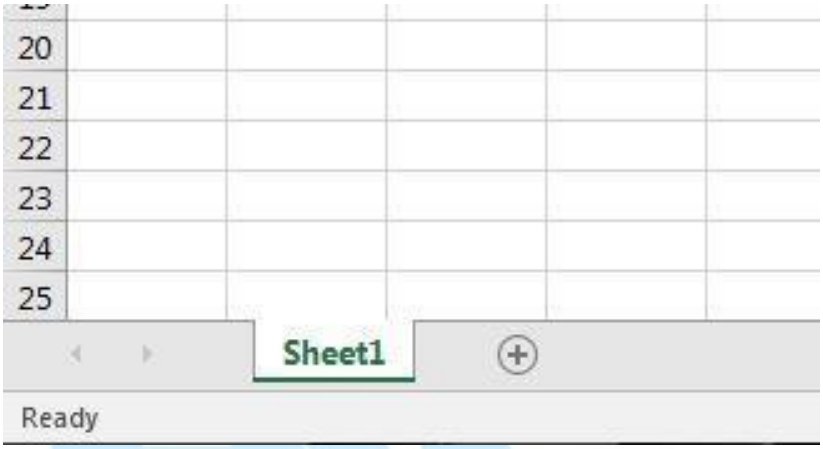
v AboutMSExcel:

- Here,let'sunderstandaboutthehomescreenofMSword.
- **Homescreen**

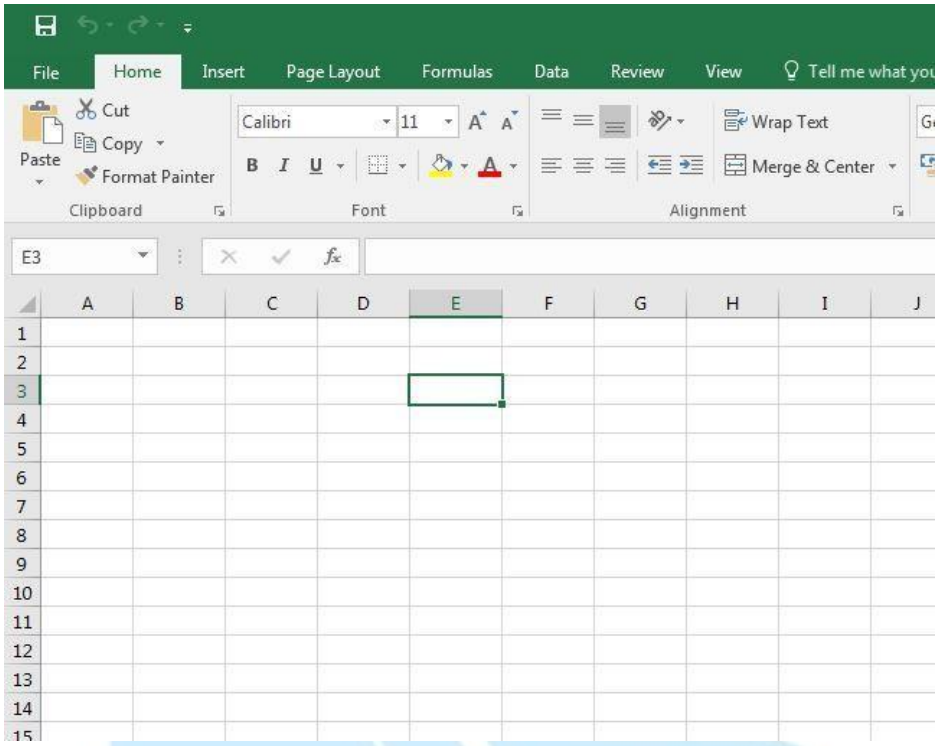


- The very first line on the home screen of MS excel is same as MS word called **title bar.**
- ThesecondlineonthehomescreenofMSexcelissameasMSwordwhich contains different menus for different layout options and formatting options for the file , called **Menu bar.**
- Thethirdlineonthehomescreenof MSexcel issameas MSwordwhich contains different options and tools for formatting and editing the text written in excel file , called **formatting bar.**

- At the last of excel home screen , you will observe that you can managemany different excel sheets in one file only.
- Theplusbuttongivehereistoaddnewsheetintheexcelfile.Andyoucan delete it by right clicking on the selected sheet and select delete option.



- On the home screen , you will the boxes which are called cells. And thebox which is darken around is called active cell.


File
Home
Insert
Page Layout
Formulas
Data
Review
View
Tell me what you
Cut
Copy
Format Painter
Paste
Clipboard
Calibri
11
Font
Wrap Text
Merge & Center
Alignment
E3
A
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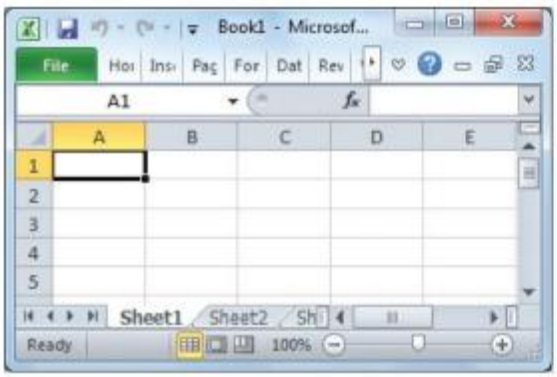
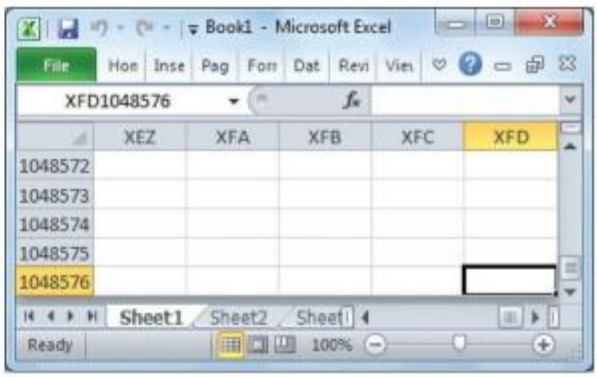
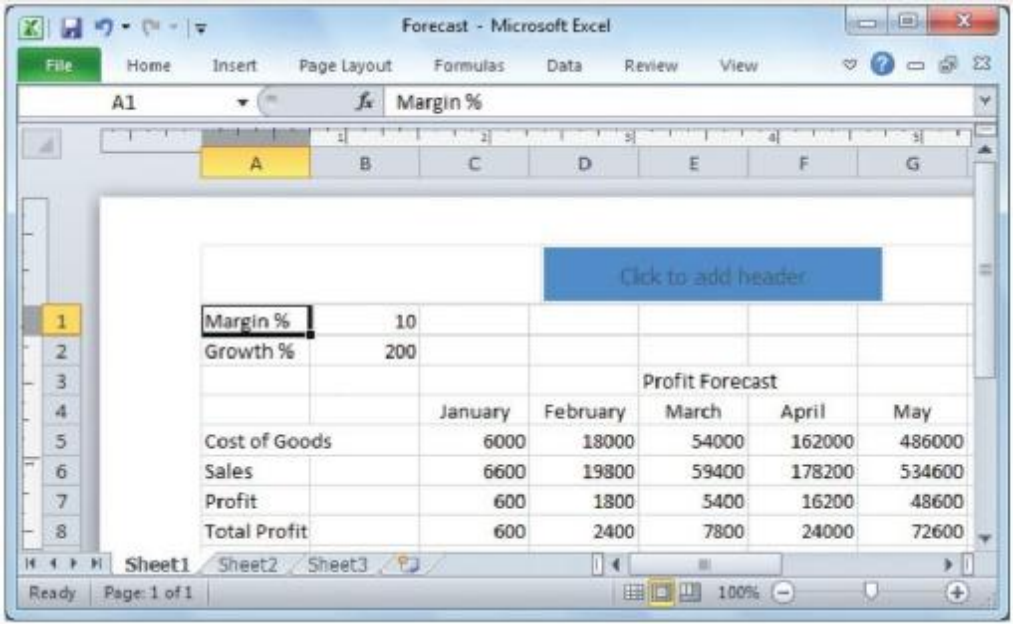
∨ FeaturesofMSexcel:

- Worksheets can have up to 1,048,576 rows and 16,384 columns, ratherthan the previous limits of 65,536 by 256.





- ColourScales,IconSets,andDataBarsapplyconditionalformatting, based on the values of cells in a group.
- PageLayoutviewallowsyoutocreateandupdatespreadsheetsastheywill appear when printed.

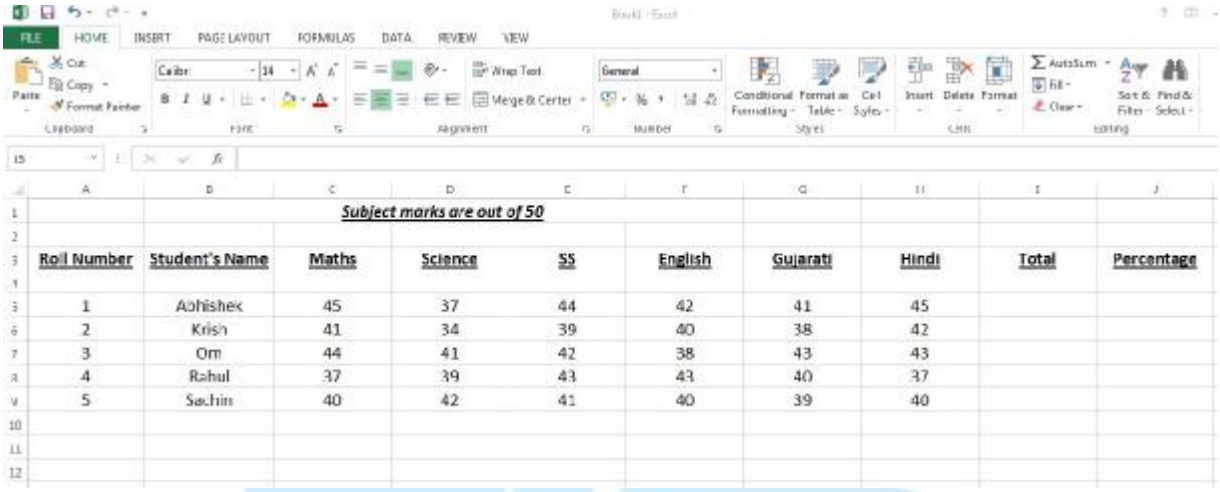


- The charting engine includes 3D rendering, transparencies and shadows, and will highlight trends in the data.

- MS Excel allows us to keep the header and footer in our spreadsheet document.
- MS Excel allows us to find the needed data (text and numbers) in the workbook and also replace the existing data with a new one.
- It allows the user to protect their workbooks by using a password from unauthorized access to their information.
- Filteringisaquick and easywayto find and work withasubsetof datain a range. A filtered range displays only the rows that meet the criteria you specify for a column.
- MSExcelprovidestwocommandsforfilteringranges:
  - AutoFilter;whichincludesfilterbyselection,forsimplecriteria
  - AdvancedFilter;formorecomplexcriteria
- Datasortingistheprocess ofarrangingdatainsomelogicalorder.MS Excel allows us to sort data either in ascending or descending order.
- MSExcelhasgotmanybuilt-informulaeforsum,average,minimum,etc. We can use those formulae as per our needs.
- MSExcelallowsustocreatedifferentchartssuchasbargraph,pie-charts, line graphs, etc. This helps us to analyse and compare data very easily.
- MS Excel automaticallyedits the result if anychanges are madein anyof the cells.
- Using formula auditing we can graphically display or trace the relationships between cells and formulas with blue arrows.
- We can trace the precedents (the cells that provide data to a specific cell) or the dependents (the cells that depend on the value in a specific cell).

v Tomakethemarksheetusingexcel:

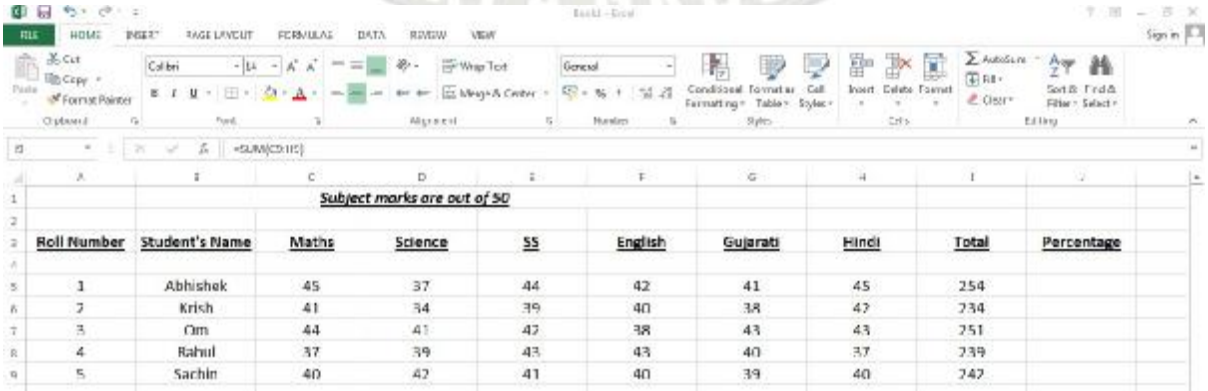
- Firstofall,enterthedataofstudentssuchasrollnumber,student'sname .subjectandmarksasshownindiagrammentionedbelow.



Subject marks are out of 50									
Roll Number	Student's Name	Maths	Science	SS	English	Gujarati	Hindi	Total	Percentage
1	Abhishek	45	37	44	42	41	45		
2	Krish	41	34	39	40	38	42		
3	Om	44	41	42	38	43	43		
4	Rahul	37	39	43	43	40	37		
5	Sachin	40	42	41	40	39	40		

- Toselectcells,dothefollowingoperation:
  =(C5:H5).
  ThatisyouhaveselectedthecellsofAbhishekfromC5toH5.

- Nowtodototal(sum),usetheformula,=sum(cellrange) That is , = sum(C5:H5)
  Similarly,calculatethesumsforeachstudents.

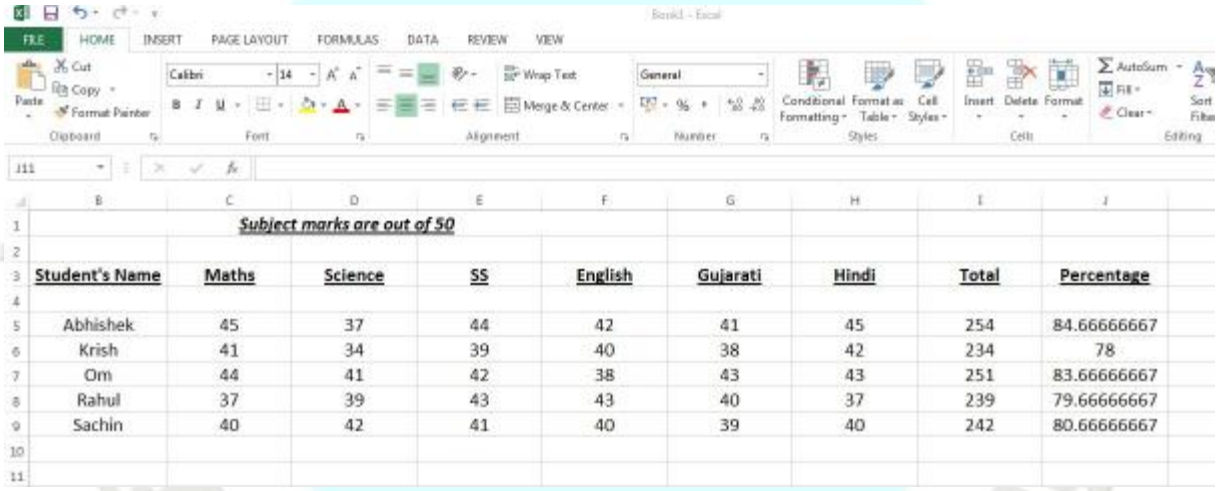


Subject marks are out of 50									
Roll Number	Student's Name	Maths	Science	SS	English	Gujarati	Hindi	Total	Percentage
1	Abhishek	45	37	44	42	41	45	254	
2	Krish	41	34	39	40	38	42	234	
3	Om	44	41	42	38	43	43	251	
4	Rahul	37	39	43	43	40	37	239	
5	Sachin	40	42	41	40	39	40	242	

- Nowtocalculatepercentage,usetheformula:
  =(totalobtainedmarks*100/300)

- Thatis,tocalculatethepercentageofAbhishek,usetheformula:
  =(totalobtainedmarks*100/300) That is ,
  = (I5 * 100 / 300)

- Similarly,calculatethepercentageofallstudents.



	B	C	D	E	F	G	H	I	J
1		Subject marks are out of 50							
2									
3	Student's Name	Maths	Science	SS	English	Gujarati	Hindi	Total	Percentage
4									
5	Abhishek	45	37	44	42	41	45	254	84.66666667
6	Krish	41	34	39	40	38	42	234	78
7	Om	44	41	42	38	43	43	251	83.66666667
8	Rahul	37	39	43	43	40	37	239	79.66666667
9	Sachin	40	42	41	40	39	40	242	80.66666667
10									
11									

∨ IntroductionofMSPowerPoint:

- Microsoft PowerPoint is a powerful presentation software developed by Microsoft.
- The program uses slides to convey information rich in multimedia. The term "slide" refers to the slide projector, which this software effectively replaces.
- Microsoft PowerPoint is a professional presentation program that allows the user to create "presentation slides" that can be displayed on the

computer screen or through a projector that is plugged into the computer.

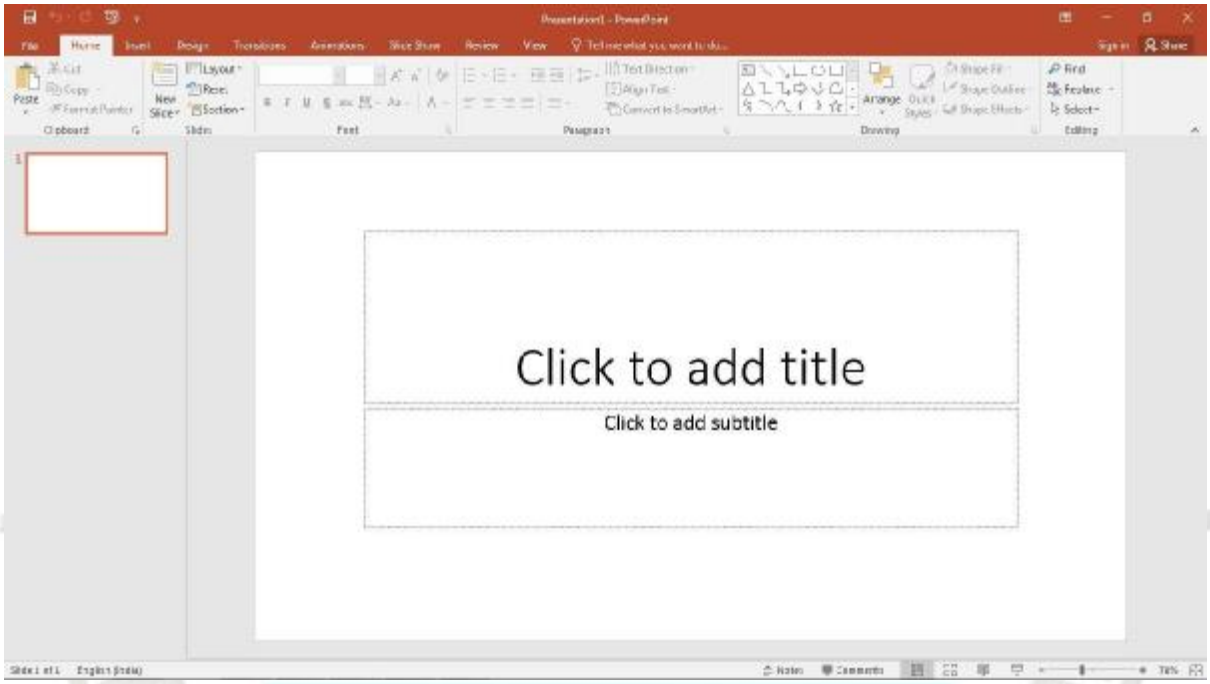
- APowerPointpresentationisagoodwaytoconveypieces ofinformation, usually in the form of an outline, to a large audience.
- Generally, PowerPoint presentations are appealing to users because they are easy to create and edit and generally small enough to fit onto a CD or a USB Jump Drive.
- Therefore,auserdoesnothavetocarryaroundanyslidesorslideprojector, and, if necessary, can make any last-minute changes to the presentation.
- Therearevariouscircumstancesinwhichapresentationismade:teaching a class, introducing a product to sell, explaining an organizational structure, etc.

∨ HistoryofMSPowerPoint:

- PowerPointwasdevelopedbyDennisAustinandThomasRudkinat Forethought Inc.
- It was supposed to benamed Presenter,butthenamewas not adapteddue to trademark issues.
- ItwasrenamedPowerPointin1987assuggestedbyRobertGaskins.
- In August of 1987, Microsoft bought Forethought for $14 million and turned it into its graphics business unit, where the company continued to develop the software.
- Thefirstiterationwaslaunchedtogetherwith Windows3.0in 1990.
- It only allowed slide progression in one direction – forward – and the amount of customization was fairly limited.

∨ AboutMSPowerPoint:

- HereisthehomescreenofMSPowerPointyouwillobservewhenyoustart the PowerPoint.



- The very first line on the home screen of MS PowerPoint is same as MS word&MSExcelcalled**titlebar**,wherethenameofyourfileiswritten.
- ThesecondlineonthehomescreenofMSPowerPointissameasMSword & MS excel which contains different menus for different layout options and formatting options for the file , called **Menu bar.**

- The third lineon thehome screen of MS PowerPoint is same as MS word & MS excel which contains different options and tools for formatting and editing the text written in excel file , called **formatting bar.**

∨ FeaturesofMSPowerPoint:

- MSPowerPointisoffersyoutocreate,designandpresentslidesona screen.
- Youcandesignslidesbycreatingabackground,addvisualssuchas pictures or videos and add your content.
- PowerPointisacompletepresentationGraphicspackage.Itgiveseverything that we need to produce a professional - looking presentation.
- PowerPoint presentation is used in different purposes such as education , business , marketing , etc.
- Slideshowisthemain keyfeatureofMSPowerPoint.
- DifferentanimationscanbegiventothecontentofPowerPointfile.
- AlsoifthedataisstatistICal,thengraphscanalsobepresentedinMS PowerPoint.
- Youcanusedifferentslidetemplatesforyourslideshow.

∨ UseofMSofficeineducation:

- MSofficecomponentsmakeseducationeffectiveandreal.
- Only,askilfulteachercanmaketheirworkperfectandattractive.
- MSwordisusedtomakeschoolmaterials,CV,anyapplication,etc.
- MSexcelisusedtomakeattendancesheet,marksheets,etc.
- MSPowerPoint,themostpowerfultoolforateachertomaketheirsubject effective by making presentation.
- When you type on wrong spelling on Microsoft Word it highlights your mistake in the red line in real time. Then you right click and correct it.

- Similar, students observe spelling mistake in real time. It means they will try to take the decision based on suggestion after click on the word underline red.
- Thatisgoingtoself-learningpracticesandfreedom(leadership)totakethe decision.
- Itwillimprovetheirbrainpower,thinkingpattern.Andifstudentsareable to do that small work, teachers can maximize their topic broadly.
- Students and teachers can insert and use diagrams, table, chart, and smart art etc. visual explanation tools.
- They can use it to teach, define, and explain complex lessons in simple methods.
- Chart, table, smart art and shapes and various other visual objects can benefit students to understand more about the topic practically.

1.2, 1.3, 1.4.IntroductiontoGoogleOfficeUtilitytoolsbyGoogle

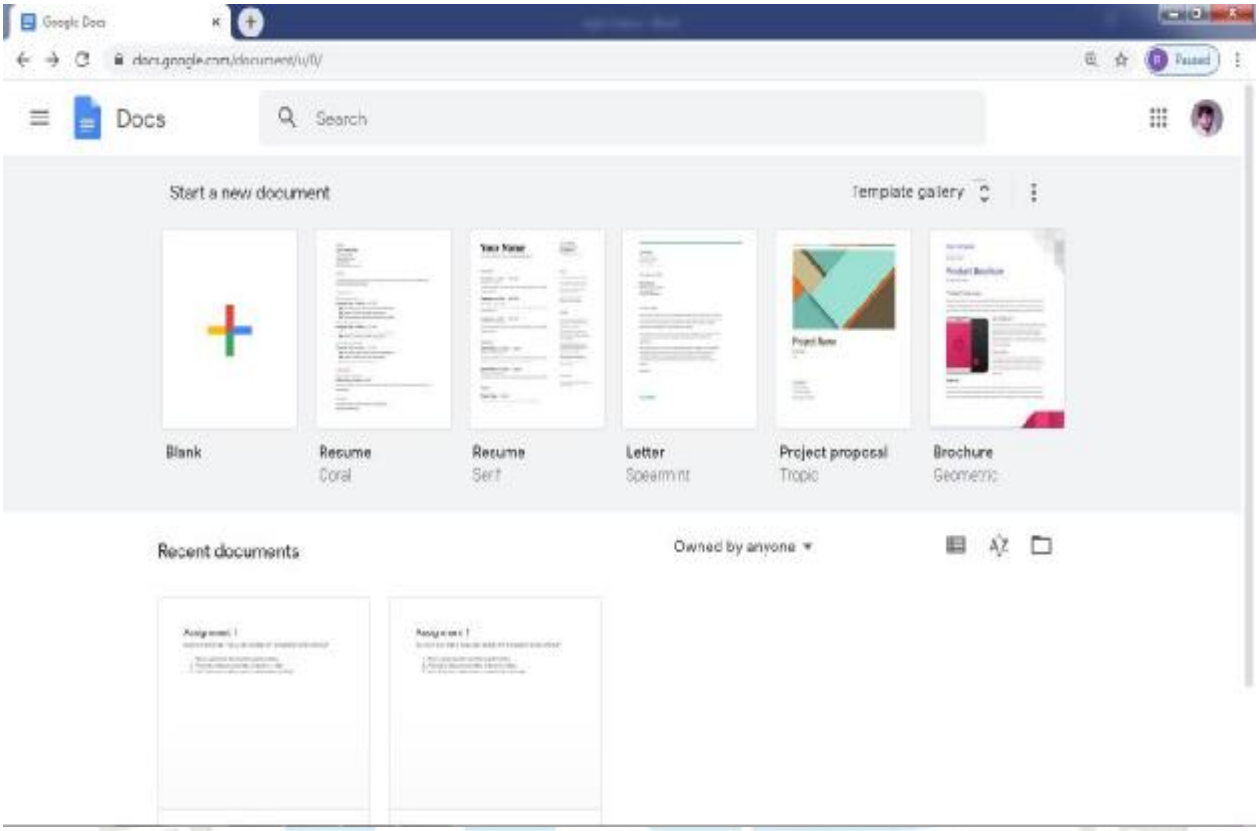
∨ GoogleDocs:

- Google Docs is a free Web-based application in which documents and spreadsheets can be created, edited and stored online.
- Files can be accessed from any computer with an Internet connection and a full-featured Web browser.
- GoogleDocsisapartofa

comprehensive package of online applications offered by and associated with Google.

- Users of Google Docs can import, create, edit and update documents and spreadsheets in various fonts and file formats, combining text with formulas, lists, tables and images.
- Google Docs is compatible with most presentation software and word processorapplications.WorkcanbepublishedasaWebpageorasaprint- ready manuscript.
- Userscancontrolwhoseestheirwork.
- GoogleDocsisidealforpublishingwithinanenterprise,maintainingblogs or composing work for viewing by the general public.
- GoogleDocslendsitselftocollaborativeprojectsinwhichmultipleauthors work together in real time from geographically diverse locations.
- All participants can see who made specific document changes and when those alterations were done.
- Because documents are stored online and can also be stored on users' computers, there is no risk of total data loss as a result of a localized catastrophe.
- However, the Internet-based nature of Google Docs has given rise to concernsamongsomeauthorsthattheirworkmaynotbeprivateorsecure.

- Here is the home screen of google docs where you can select the type of document which you want to create and work on it.



∨ GoogleSlides:

- GoogleSlidesisapresentationeditorinthe Google Docs and Drive productivity suite.
- Google Slides are presented in a linear fashion, where slides appear in order (unlesslinksorothertransitionsareadded)

- Google Slides makes your ideas shine with a variety of presentation themes, hundreds of fonts, embedded video, animations, and more.
- It affords real time collaboration between editors as well as different

options for sharing the presentations.

- Because the presentations are in the cloud and associated with a Google account, users and owners of Google Slides can access them at any computer without having to carry around a flash drive.
- Slidessupportsseveralfiletypes,including.ppt,.pptx,.odp,.jpg,.svg,and .pdf. This makes it easy to view or convert Microsoft Office files directly from Google Drive or insert images directly into a slide.
- Additionally,arevisionhistoryiskept,whichallowseditorstoaccessany version of the presentation in the past and also keeps a log of who made which edits.
- Lastly, Google Slides can be converted to different formats (such as PowerPoint or PDF) and are also able to edit PowerPoint presentations.
- Google Slidesis availableon alldevices andplatforms; all you need isan internet connection and a web browser (or, in the case of mobile, the Android and iOS apps).
- Here is the home screen of google slides where you can select the type of document which you want to create and work on it.

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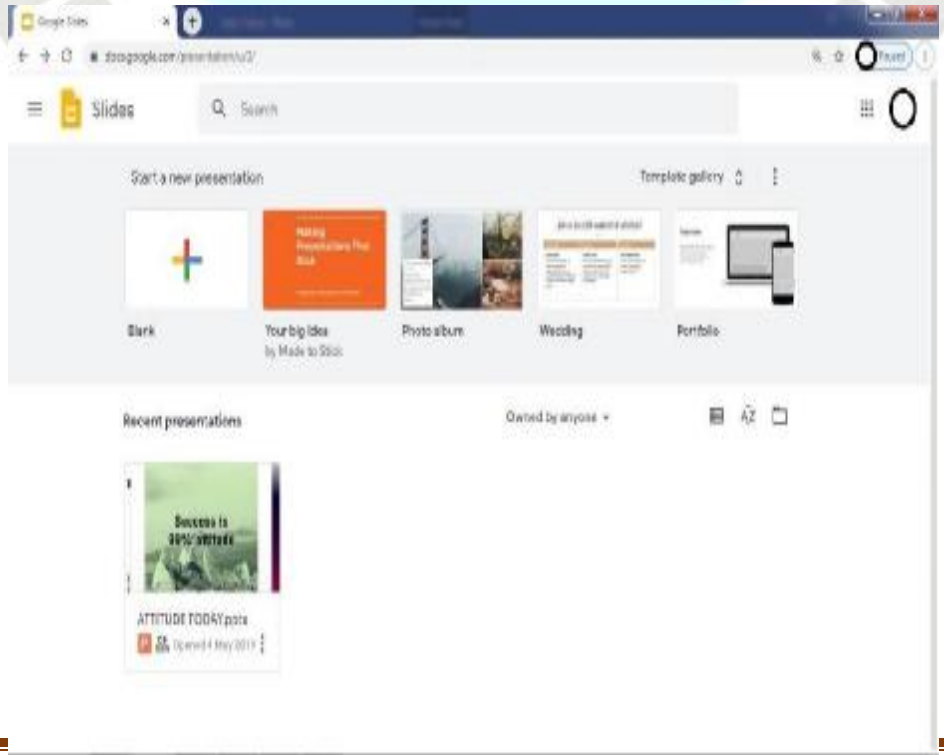
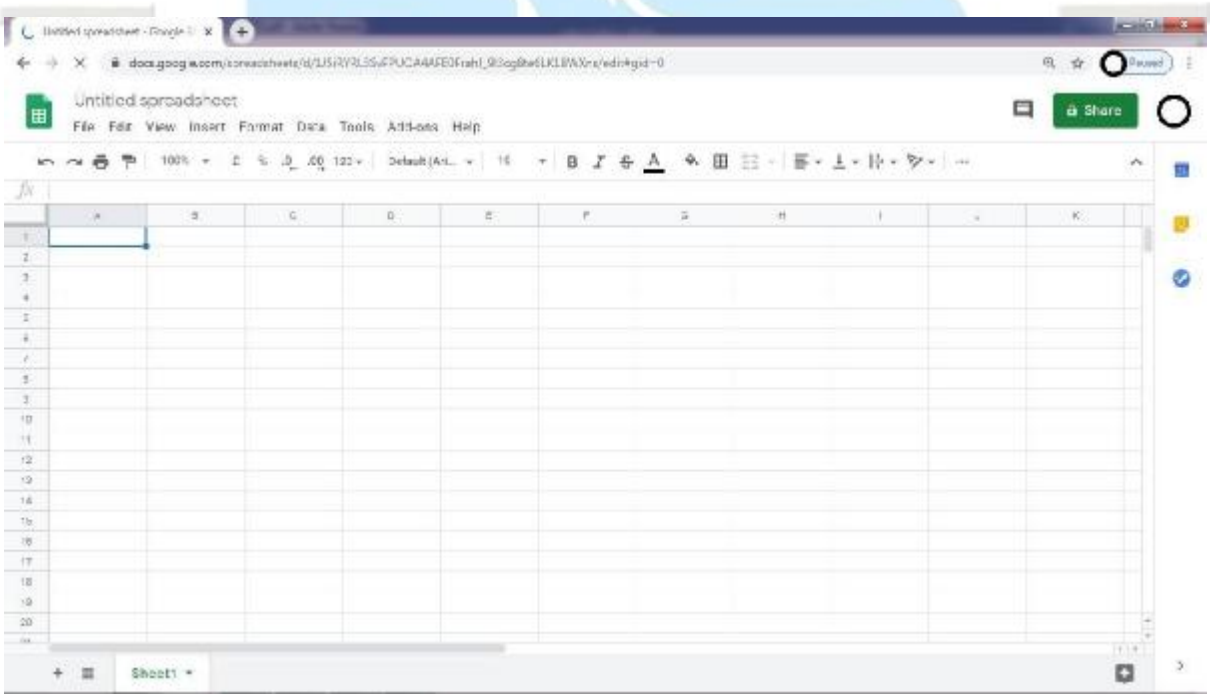


∨ GoogleSheets:

- Google Sheets is a hugely powerful tool, for everything from digital marketing to finance modelling , from project management to statistical analysis,infact,justaboutany activityinvolvingtherecordingandanalysisofdata.
- Google Sheetsallows you toorganize,edit, and analyze different typesof information using spreadsheets.
- HereisthehomepageofgooglesheetswhichissimilartoMS excel.



UNIT:2 INTRODUCTIONTOINTERNET AND TEACHING LEARNING TOOLS

2.1 IntroductionToInternet&ItsUsesInEducation

∨ Internet:

- The Internet is the connection of countless computers spread all over the world.
- ThenetworkofcomputernetworksmeanstheInternet.
- ThefullformofINTERNETisInterconnectednetworkofthewebservers worldwide.
- TheInternetisthelargestcomputernetworkintheworld.Alsocalled Global Network.
- The Internet is a global network of computers that connects millions ofcomputers around the world.
- The Internet links are computer networks all over the world so that users can share resources and communicate with each other.
- Any information or message can be sent or received through the internet

from anywhere in the world.

- Theinternetisnotownedbyanybody.But therearevariousorganizations that manage different parts of the network.
- InternetaccessbecameavailableinIndiafromAugust15,1995.
- InIndia,theInternetisusedforcommercial purposes.
- VSNL(VideshSancharNigamLimited)launchedtheGIAS(Gateway Internet Access Service) service for Internet use.
- TodaytheInternetconnectsalargepopulationoftheworldwithanestimated population of over 500 million.

∨ HistoryofInternet:

- We send e-mails , make calls over the internet and discuss topics we take an interest in.
- Evenourbankingisgoingvirtual.
- Butwhatwetakeforgrantedtodaywasonlyavagueideafiftyyearsago.
- Before1957 ,computers onlyworked on onetask at atime. This is called batch processing.
- Thiswasquiteineffective.
- Withcomputersgettingbiggerandbigger,theyhadtobestoredinspecial cool rooms.
- But then the developers couldn't work directly on the computers anymore and specialists had to be called in to connect them.
- Programming at that time meant a lot of manual work and the indirect connectiontothecomputersledtoalotofbugs,wastingtimeandfraying the developer's nerves.
- Theyear1957markedabigchange.
- A remote connection had to be installed , so the developers could work

directly on the computers.

- Atthesametime,theideaoftime-sharingcameup.
- Thisisthefirstconceptinthecomputertechnologytosharetheprocessing power of one computer with multiple users.
- OnOctober4,1957,duringthecoldwar,thefirstunnamedsatellite Sputnik - 1 was sent into the orbit by the Soviet Union.
- Thefearofa"MissileGap"emerged.
- In order to secure America's lead in technology , the US founded the "Defence Advanced Research Project Agency" (DARPA) in February 1958.

- Atthattime,knowledgewasonlytransferredbypeople.
- The DARPA planned a large - scale computer network in order to accelerate knowledge transfer and avoid the doubling up of already existing research.
- ThisnetworkwouldbecometheArpanet.
- Furthermore , three other concepts were to be developed which are fundamental for the history of the internet. These are
  - ü The concept of a military network by the Research and Development (RAND) corporation in America.
  - ü ThecommercialnetworkoftheNationalPhysicalLaboratory(NPL)in England.
  - ü Thescientificnetwork,Cyclades,in France.
- The scientific , military and commercial approaches of these concepts are the foundation of our modern internet.
- In1962,Americanferretaircraftsdiscoveredmiddleandlongrange missiles in Cuba , which were able to reach the United States.

- At that time , information systems had a centralized network architecture whichwasdevelopedtoavoidbreakdownduringanattack,whichincase of loss of a node would still be operative.
- Communication still used to work through radio waves that would have cause problems in case of atomic attack.
- Theionospherewouldbeaffectedandthelong-waveradiowavewouldn't workanymore.Therefore,theyhadtousedirectwaves,whichhowever, don't have a long range.
- Abettersolutionwasthemodelofadistributed network.
- Thus,longdistancescouldbecoveredwithaminimumofinterference.
- Another milestone followed with the development of the French network "Cyclades".

- Since Cyclades had a far smaller budgetthanArpanetandthusalso fewer nodes , the focus was laid on the communication of other networks.
- Inthisway,theterm"inter–net"was born.
- Moreover,CycladesconceptwentfurtherthanARPA'sandtheNPL's.
- During communicationbetween sender and receiver , the computers were not to intervene anymore , but simply serve as a transfer node.
- Cyclades protocol went through all machines using a physical layer that was implemented into the hardware , providing a direct connection with the receiver - an end-to-end structure.
- DARPA's Transmission Control Protocol was to connect the computers through gateways and the international organization for standardization designed the OSI (Open System Interconnection) reference model.

- TheinnovationofOSIwastoattemptthestandardizethenetworkfromits ends and the channel's division into separate layers.
- Finally , the TCP assimilated the preference of the OSI reference model and gave way to TCP/IP protocol , a standard which guaranteed compatibility between networks and finally merged them , creating the INTERNET.
- ARPANETadoptedTCP/IPonJanuary1,1983,andfromthereresearchers began to assemble the “network of networks” that became the modern Internet.

∨ UsesofInternetineducation:

- Foreducationalpurposes,itiswidelyusedtogatherinformationandtodo research or add to the knowledge of various subjects.
- Students need internet to search for information related to exams, curriculum, results, etc.
- Oneofthelargestbarrierstoeducationishighcost.TheInternetimproves the quality of education, which is one of the pillars of sustainable development of a nation.
- It provides education through Videos (like YouTube tutorial videos) and web tutorials which is affordable to everyone and cost-effective.
- The internet has allowed students to be in constant touch with theirteachersorwithother fellow classmates with the help ofsocialmedia,messagingapps and chat forums.

- Parentscaninteractaswellascommunicate with teachers and school authorities about their kid's performance in the school.
- The Internet has become a major tool for effectiveteachingaswellasalearningtool. Teachers can use it as a teaching tool by posting their teaching materials (notes and videos) on school website or forum .
- Thelearningprocessbecomesinterestinganddiversewiththeuseof tutorial videos and notes.
- Teacherscanteachwiththeuseofanimation,PowerPointslidesand images to capture the student's attention.
- Studentsandguardianscanavailofthebenefitsofstudy,reference,books, specialists etc. through the Internet.
- Studentscanalsogettheresultsoftheirexamssometimest hroughthe internet.
- Teacherscanrecordtheirlecturesandprovideittothestudentsfor revisions which is better than reading from notes.
- Youcanaccessmanyoftheworld'slibrariesthroughthe Internet.
- Youcanfindinformationaboutmostuniversitiesinthe world.
- Besides,youcanbeastudentofauniversityrunningDistance Education.
- Researcherscangetinformationthroughthe Internet.
- It helps the students with the learning process as it helps to simplify the knowledge.Also,ithelpstovisualizewhatisbeingtaughtbytheteachers in school.
- IfyouwanttoprepareforfinalexamsyoucanaccessVideoTutorialsand other resources online through the Internet.
- In this present time (COVID – 19 pandemic) , internet plays the major role in online education.

∨ UsesofInternetexceptededucation:

- TheInternetallows youtoaccess manytopicsfrom yourhomeanywhereinthe world in less time and faster.If you want, you can take out the print as well.
- ThroughtheInternetyoucanchatandwritewithanyonesittinginanycornerof theworldthroughCHAT.Iftheybothhaveawebcamera,youcanalsoseeeach other while talking.
- ThroughtheInternetyoucanexchangeanykindofsound,pictures,graphicsand information.
- Many organizations advertise jobs on the Internet.This is how many organizationsofferjobs,whichanyon e canbenefitfrom.Oftenorganizations also organize their interviews on the Internet.

- Business companies or other entities display their information on the Interneteither in advertising or by opening a site.
- The world's leading newspapers as well as news channels have their own web site.Through this website we get the latest news whenever we want.
- TheInternetallowsyoutodownloadnewgames,newsongsto yourcomputer.
- Through the Internet you can e-mail a message to anyone in the world at low cost and in just five to seven seconds.You can also Fax.
- Housewives-
  Womencanfindinformationoncooking,homedecorating,family care, ways to make the best of the waste from the Internet.
- InformationondoinganewbusinesscanbefoundontheInternet.Besides,the

businessmen do not have to go out of their own homes to decide on import and export

- On the Internet we can find or give more information by participating in group discussions.

- Online shopping , banking , surfing , downloading , etc. can also be done using internet.

∨ Limitationsofinternet:

- Thequalityofinformationresourcesmightnotalwaysbereliableandaccurate.
- Pornographythatcangetinthehandsofyoungchildrentooeasily.
- Hackers can create viruses that can get into your personal computer and ruin valuable data.

- Hackerscanusetheinternetforidentity theft. Internet is definitely not 100% secure.
- Mostofstudentsspendtoomuchoftimethroughtheinternet.Studentsarelikely to neglect their studies.
- Students might lose concentrate on their studies because they spent too much time on internet in chatting , social media , watching movies , etc.
- With a large amount of information freely available on the internet theft and misuse of this information is a likely possibility.
- Children nowadays seem losing their ability to communicate with others. They are used to communicate with others via internet but they cannot communicate with others face by face fluent.
- It was a strange sight that internet had make people losing their ability to

communicate. It is because people now are over depending on internet.

2.1 ***E-mail***

E-mail stands for Electronic Mail or Electronic Mailer. The most commonly used feature of the networks in the field of communication is e-mail. It is the transmission of messages from one computer to another. Communication can take place between two to many users. It not only sends the message in text format, but also we can add images, and documents in the form of PDFs, videos, or other attachments.

The person who has to send a certain message is called the sender and the one who receives it is called the receiver. In order to have successful communication, each user should have a unique email address (it is just like posts, where each post is sent to persons with a unique home address). The e-mail address may look something like this

12345@gmail.com

History Of Email

E-mail is much older when compared to the internet. The first-ever e-mail was sent to computers in 1965 by using the MIT program called a mailbox. By using this program the user can type a message and send it. Whereas the receiver can see the message only after logging in to the computer.

Whereas in 1969 the first message using ARPANET was sent from computer to computer by the US Department of Defence.

ARPANET: Advanced Research Projects Agency Network

It is a kind of network that connected all the computers that are present in that

department.

The First Message was Sent using ARPANET

Later in 1972, Ray Tomlinson developed the ARPANET into ARPANET's networked e-mail system and invented electronic mail. It is the one which we use today. Here his contribution was "@" which indicated the destination address of the message to be sent. It got tremendous popularity as people wondered how one can send an electronic mail to the others who are completely not present in the same place.

In 1993, internet use increased and electronic mail was replaced by "E-mail". Then Yahoo, Hotmail, AOL (America Online), and Echomail platforms were launched. Whereas the year 2004 completely changed the history of E-mail with the launch of Gmail (a platform to send an email).

Mailing Format

The E-mail can be divided into three main components:

- Message Envelope
- Message Header
- Message Body

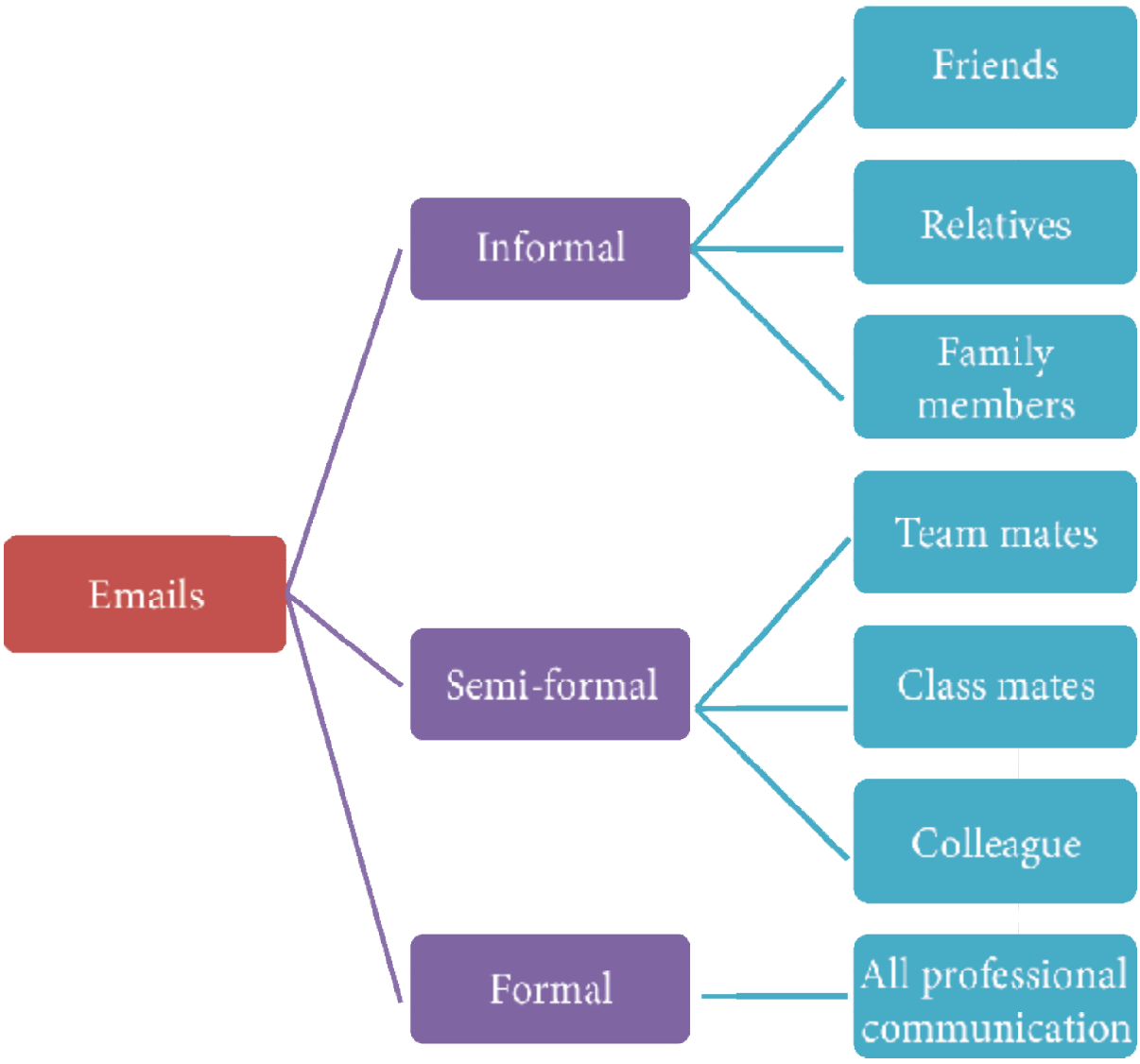
E-mail Format

From: Sender's Email ID
To: Recipient's Email ID
Cc: Other individual receiving the same mail with visible ids
Bcc: Other individual receiving the same mail with invisible ids
Subject: Title or the reason of writing mail
Salutation: Words like Dear, Respected, Hi etc.
Main body: The main content of the mail 1. Introduction 2. Matter in detail 3. Conclusion
Closing: Ending statement
Attachments: Attached files with emails
Signature line: Sender's name, signature, and other details of contact

Structure of Email

Types of Email

Emails are broadly classified into three categories:



Types of Emails

- **Informal:** It is sent to friends and family. There are no rules for writing an email of this type, and one can use any language.

To: ABC

CC/BCC:

Subject: Inviting for a birthday party

Hello ABC!

Hope you are doing well. I am very excited to invite you to my brother's birthday party tomorrow at XYZ Hotel from 6:00 pm to 9:00 pm. The theme of the party is “Spiderman”.
Join us at the party and let us have a great time together!

See You Soon
ABC

- **Semi-formal:** It is sent to colleagues and teammates. We can use simple language here, and the messages can be casual or friendly in nature.

To: ABC

CC/BCC:

Subject: Intra-college Painting Competition.

Hello Everyone!
This is to convey to all of you guys that there is an intra-college Painting competition held on our college campus on Dec 27 from 11:00 am in Room no 2.

Whoever is interested is asked to take part in the competition.

Feel free to contact me for any more information.

Thanks,
ABC
(Class monitor)

- **Formal:** It is used to communicate to the government department, schools, businesses, or any officers. Here certain rules have to be followed like text should be in respectful language. You shouldn't add any unwanted things like jokes, funny text etc. Writing a subject is always mandatory.

To: ABC

CC/BCC:

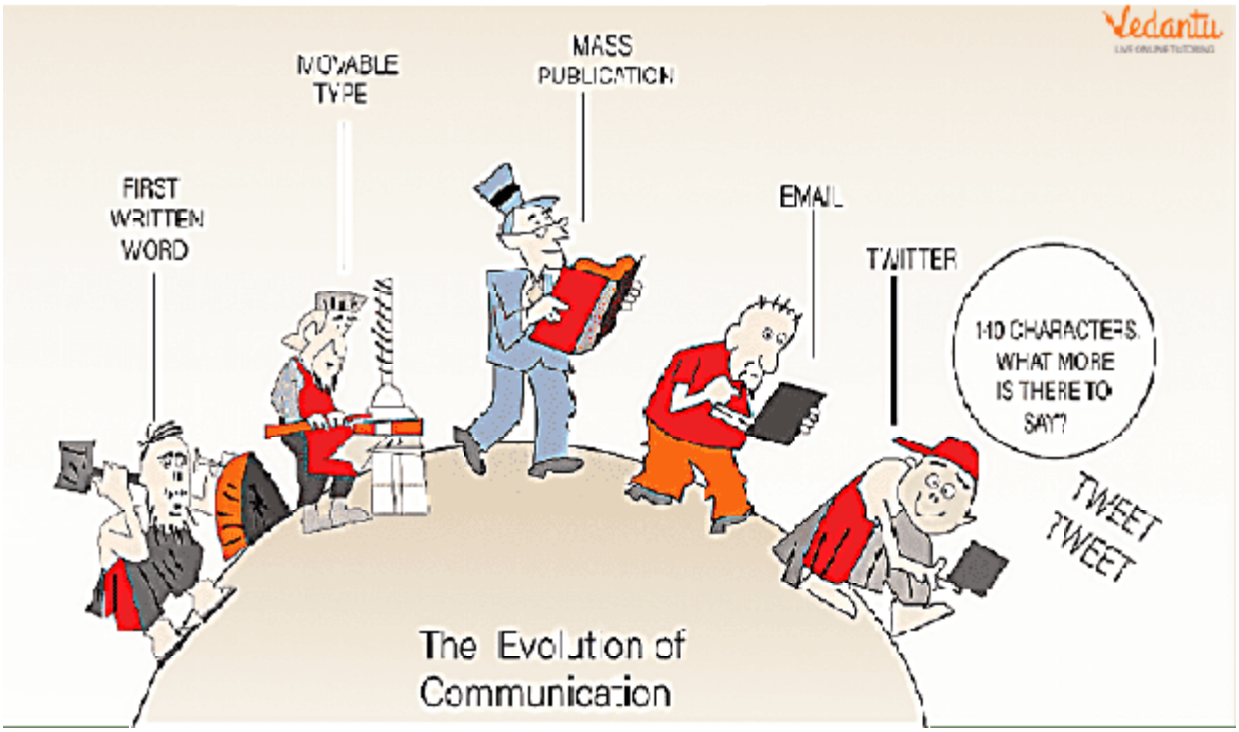
Subject: Requesting the extension of the deadline for the project

Dear sir,
Since we are facing an error in the platform for project 123 I request you to extend the completion date of the project to this weekend.
Kindly look into the matter.

Thanks and Regards,
LMN
(Project Head)

There are other kinds of emails that are used today:

- Promotional email: This is a business to business email that mentions the products or services of a company.
- Transactional email: It is related to business deals or transactions.
- Plain-text email: In this type of email only a text message is sent.
- Newsletters: It is the report that is sent by the companies or organisations to their employees or subscribers about the company's growth or achievements.



Evolution of Communication

Uses of E-mail

You can use email for the following purposes:

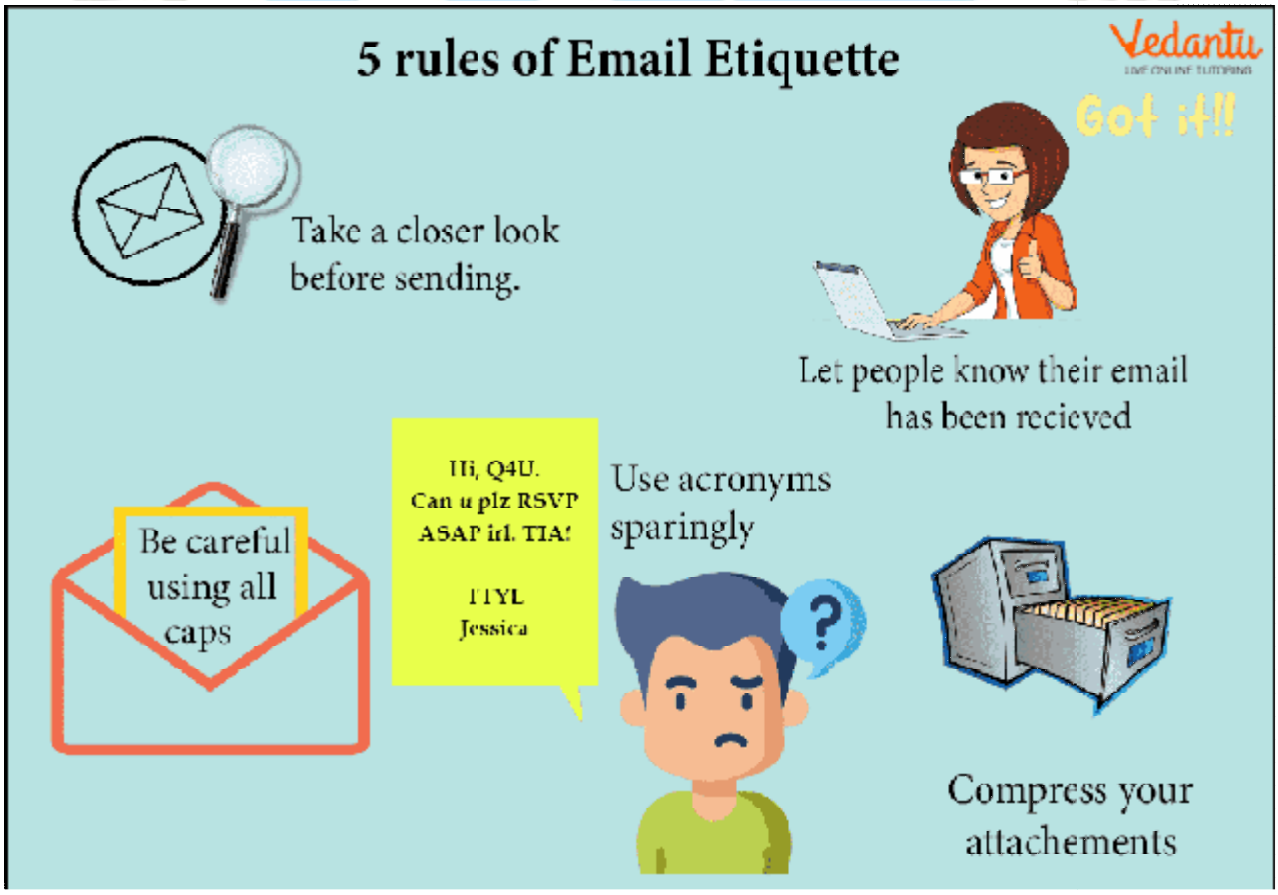
- It is easy to use and can be accessed easily.
- Can share information easily.
- We can send messages at any time.
- Can connect to people all over the world by sitting at your home.

- Can work with others.
- Communication can be done with many people at the same time.

Advantages and Disadvantages of E-mail

Advantages	Disadvantages
It is free of cost.	In the case of conveying long messages, it takes a lot of time.
Communication can be done globally.	There are chances of getting ignored or no response in cases of emergency.
Easy access as it is available at our fingertips.	Have to deal with unwanted messages.
Communication happens faster.	There are chances of getting the message delivered to the wrong person due to a change in email address.

Email Etiquette



2.1. BLOG

Definition of a blog

Blogs are a type of regularly updated websites that provide insight into a certain topic. The word blog is a combined version of the words “web” and “log.” At their inception, blogs were simply an online diary where people could keep a log about their daily lives on the web. They have since morphed into an essential forum for individuals and businesses alike to share information and updates. In fact, many people even make money blogging as professional full-time bloggers.

As the publishing world has evolved, and more of it has moved online, blogs have come to occupy a central position in this digital content world. Blogs are a source of knowledge, opinion and concrete advice. While not yet posed to replace journalism as an art form, people increasingly look to trusted blogs to find answers to their questions, or to learn how to do something.

Blogs are always evolving both in terms of how they're created and what they are used for. They can be a vehicle for creativity and for marketing. They're also increasingly created and read on mobile apps, as mobile blogging also comes into its own.

One of them was then-Swarthmore-College undergrad, Justin Hall, who created a site called links.net in January 1994. It was essentially a review of HTML examples he came across from various online links, but it was enough for the New York Times Magazine to dub him the “founding father of personal bloggers”.

Introduction :-

A blog introduction is the first paragraph of your blog post. It typically appears right below the title and is the first section that readers see when they visit a blog (without the need to scroll down).

Blog post introductions are your first chance to impress readers and set the tone for what's to come. A good blog introduction can spark their interest so it's important

to write something compelling that will capture their attention right away.

Introductions are essential for both reader engagement and improving a post's ranking on search engine results pages (SERPs).

By including relevant keywords throughout your introduction—as well as other sections of your post — you increase its chances of appearing higher up in SERPs. This will give you more visibility online and ultimately result in increased traffic on both social media platforms and websites where it is posted.

The importance of a blog introduction cannot be overstated. It is the first impression readers have and can determine whether they continue to read or not. Therefore, understanding how to craft an effective blog intro is essential for success in content marketing.

How to write a great blog post introduction:

Plant a question in the reader's mind.

Don't answer it until the end.

Elements of an Effective Blog Introduction

When you're writing a blog introduction, your main goal is to draw in readers and keep them engaged. Here are some elements that can help you craft a compelling intro.

1. Build Anticipation with Mystery or Intrigue

An intriguing opening line will get your reader's attention right away. You can use mystery or suspense by hinting at something without giving too much away or posing a thought-provoking question that encourages people to keep reading to find the answer.

2. Highlight Pain Points

A great way to connect with readers is by highlighting a problem they may have encountered before and showing how you plan on solving it through your post. This shows empathy for your audience as well as demonstrates your expertise in the topic area – both of which increase engagement levels.

3. Add Statistics

Numbers speak louder than words, so using statistics in your introduction can be incredibly powerful when trying to draw people in. They give context and provide proof that what you're saying is true. Not to mention, they make things easier for readers who don't want to read long paragraphs of text.

4. Empathize With Your Audience

Connecting with your reader on an emotional level can increase engagement rates significantly.

Why? Because it makes them feel seen and heard by someone who understands their struggles or experiences. Showing empathy through storytelling tactics such as anecdotes or metaphors helps build trust between your brand and your potential customers – increasing conversion rates overall.

5. Provide Value

Your opening paragraph should introduce something valuable that readers won't find anywhere else. This could be advice, tips and tricks, or case studies —

whatever resonates most with your target audience. Promising this upfront gives readers a reason to invest time reading the rest of your article.

An effective blog introduction should engage the reader, provide context and direction for the content to follow, and set up a strong foundation for success.

So how long should a blog introduction be?

The Ideal Length for Blog Introductions

When it comes to crafting an effective blog introduction, length is one of the most important factors.

The ideal word count will depend on the type of topic and target audience preferences.

For example, a technical post may require more words than a lighthearted piece about lifestyle topics. Additionally, take mobile optimization into consideration when deciding how long an intro should be, as users are often accessing content from their phones or tablets.

For general-purpose blog posts, 100-200 words are usually sufficient for intros. Reviews or opinion pieces can also have shorter intros that focus primarily on providing background information without delving too deeply into details.

On the other hand, technical topics such as coding tutorials or financial advice may require longer paragraphs to properly introduce concepts and provide context for readers unfamiliar with them.

When determining word count for blog intros, user behavior also plays a role in engagement rates. People tend to skim through content before committing to reading all of it so having shorter paragraphs and bullet points can help break up text blocks to keep readers engaged.

Now let's explore some writing techniques for crafting engaging intros.

Want to learn every step involved in our C.R.A.F.T. framework? You're in the right place. To learn more about AIO and C.R.A.F.T, read our individual guides:

- **C –** a full guide on cutting the fluff
- **R –** a full guide on optimizing your content for SEO
- **A –** a full guide on adding blog images and visuals
- **F –** a full guide on how to fact-check
- **T –** a full guide on how to trust-build in your content

Additionally, subscribe to our blog, watch our C.R.A.F.T. and AIO tutorials on our YouTube channel, and read this blog to understand the AIO model.

Techniques For Writing Engaging Blog Intros

The opening paragraph of any piece of writing should be interesting enough to draw people in and keep them engaged until the end. An effective way to do this is by introducing a controversial topic, opinion, or story at the beginning that captures readers' curiosity and encourages them to read on.

- **Catchy phrases or witty one-liners** are great for your opening line as these can grab people's attention from the start.
- **Humor and allusions to popular culture** can add variety to an introduction, as well as provide readers with a relatable context.
- **Making jokes or referencing popular movies, TV shows, or books** also helps draw people in and keep them interested.
- **Storytelling tactics like anecdotes or metaphors** also capture the reader's attention as they set the tone for the post.
    - Anecdotes allow you to connect with your audience on a personal level by sharing experiences from your own life.
    - Metaphors paint a vivid image of what you're discussing in the post.

Using controversial opening statements also can be effective when introducing topics such as politics or religion. This tactic grabs people's attention right away and gets them thinking about different perspectives before diving into the main points. This technique should only be used sparingly and carefully since it could potentially alienate some readers.

Your writing style is also important when creating engaging intros. Remember the acronym KISS: keep it short and sweet. Sentences with less than 25 words are

easier to read while long sentences can make people skip ahead or exit the page entirely.

Including relevant keywords in your intro will help search engines index your content so that potential readers can find it more easily – this is especially useful for SEO purposes.

Finally, writing with an authoritative yet conversational style helps establish trust between you and your readers while also making your content more relatable.

Let’s look at some of the best practices for writing engaging intros that use humor, storytelling, and anecdotes to break the monotony of long-form content.

Types of blogs:-

There are many different types of blogs, differing not only in the type of content, but also in the way that content is delivered or written.

Personal blogs

The personal blog is an ongoing online diary or commentary written by an individual, rather than a corporation or organization. While the vast majority of personal blogs attract very few readers, other than the blogger's immediate family and friends, a small number of personal blogs have become popular, to the point that they have attracted lucrative advertising sponsorship. A tiny number of personal bloggers have become famous, both in the online community and in the real world.

Collaborative blogs or group blogs

A type of weblog in which posts are written and published by more than one author. The majority of high-profile collaborative blogs are organised according to a single uniting theme, such as politics, technology or advocacy. In recent years, the blogosphere has seen the emergence and

growing popularity of more collaborative efforts, often set up by already established bloggers wishing to pool time and resources, both to reduce the pressure of maintaining a popular website and to attract a larger readership.

Microblogging

Microblogging is the practice of posting small pieces of digital content—which could be text, pictures, links, short videos, or other media—on the internet. Microblogging offers a portable communication mode that feels organic and spontaneous to many users. It has captured the public imagination, in part because the short posts are easy to read on the go or when waiting. Friends use it to keep in touch, business associates use it to coordinate meetings or share useful resources, and celebrities and politicians (or their publicists) microblog about concert dates, lectures, book releases, or tour schedules. A wide and growing range of add-on tools enables sophisticated updates and interaction with other applications. The resulting profusion of functionality is helping to define new possibilities for this type of communication. Examples of these include Twitter,
Facebook, Tumblr and, by far the largest, Weibo.

Corporate and organizational blogs

A blog can be private, as in most cases, or it can be for business or not-for-profit organization or government purposes. Blogs used internally and only available to employees via an Intranet are called corporate blogs. Companies use internal corporate blogs to enhance the communication, culture
and employee engagement in a corporation. Internal corporate blogs can be used to communicate news about company policies or procedures, build employee esprit de corps and improve morale. Companies and other organizations also use external, publicly accessible blogs for marketing, branding, or public relations purposes. Some organizations have a blog authored by their executive; in practice, many of these executive blog posts

are penned by a ghost writer who makes posts in the style of the credited author. Similar blogs for clubs and societies are called club blogs, group blogs, or by similar names; typical use is to inform members and other interested parties of club and member activities.

Aggregated blogs

Individuals or organization may aggregate selected feeds on a specific topic, product or service and provide a combined view for its readers. This allows readers to concentrate on reading instead of searching for quality on-topic content and managing subscriptions. Many such aggregations called planets from name of Planet (software) that perform such aggregation, hosting sites usually have *planet.* subdomain in domain name (like http://planet.gnome.org/).

By genre

Some blogs focus on a particular subject, such as political blogs, journalism blogs, health blogs, travel blogs (also known as *travelogs*), gardening blogs, house blogs, Book Blogs, fashion blogs, beauty blogs, lifestyle blogs, party blogs, wedding blogs, photography blogs, project blogs, psychology blogs, sociology blogs, education blogs, niche blogs, classical music blogs, quizzing blogs, legal blogs (often referred to as a blawgs), or dreamlogs. How-to/Tutorial blogs are becoming increasing popular. Two common types of genre blogs are art blogs and music blogs. A blog featuring discussions, especially about home and family is not uncommonly called a mom blog. While not a legitimate type of blog, one used for the sole purpose of spamming is known as a splog.

By media type

A blog comprising videos is called a vlog, one comprising links is called a linklog, a site containing a portfolio of sketches is called a sketchblog or one comprising photos is called a photoblog. Blogs with shorter posts and

mixed media types are called tumblelogs. Blogs that are written on typewriters and then scanned are called typecast or typecast blogs. A rare type of blog hosted on the Gopher Protocol is known as a phlog.

By device

A blog can also be defined by which type of device is used to compose it. A blog written by a mobile device like a mobile phone or PDA could be called a moblog. One early blog was Wearable Wireless Webcam, an online shared diary of a person's personal life combining text, video, and pictures transmitted live from a wearable computer and Eye Tap device to a web site. This practice of semi-automated blogging with live video together with text was referred to as sousveillance. Such journals have been used as evidence in legal matters.

Reverse blog

A reverse blog is composed by its users rather than a single blogger. This system has the characteristics of a blog and the writing of several authors. These can be written by several contributing authors on a topic or opened up for anyone to write. There is typically some limit to the number of entries to keep it from operating like a web forum.

2.2. introduction to online teacher support tools:

1. Google Classroom

- **Introduction:**

Aclassroomisalearningspace,aroom in which both children and adults learn. Classrooms are found in educational institutions of all kinds, ranging from preschools to universities, and

may also be found in other places where education or trainingisprovided,suchascorporationsand religiousandhumanitarianorganizations.Theclassroomprovidesaspace where learning can take place uninterrupted by outside distractions.

Asthetechnologyisdevelopingwithveryhighspeed,theclassroomsare alsonowavailableoninternetsinwhichyoucanlearn,discuss,organizelectures , etc. Among them , the best application or tool is Google Classroom which we are going to discussion in this unit.

∨ GoogleClassroom :

- Google Classroom is designed to help teachers and students communicate and collaborate, manage assignments paperlessly, and stay organized.
- Google Classroomis part of the Google Apps for Education suite of tools and is only available to Google Apps for Education accounts
- Classroomisafreeserviceforschools,non-profitorganisationsandanyone with a personal Google account.
- Classroomhelpsstudentsandteachersorganizeassignments,boost collaboration, and foster better communication.
- Classroom makes it easy for learners and instructors to connect with one another – inside and outside of schools.
- Classroomsavestimeandpaper,andmakesiteasytocreateclasses, distribute assignments, communicate and stay organised.

∨ Advantagesofgoogleclassroom:

- Easytosetup
- Saves time
- Improvesorganisation
- Affordableandsecure
- Workisneverlost
- GoogleClassroomhelpsyoutocommunicatemoreefficiently
- WithGoogleClassroom,collaborationiseasieroutsideofschool
- Teacherplanningiseasy,andtheup-fronttimeisworthit
- Upgradesandimprovementsareaconstant
- Cleananduser-friendlyinterface
- IntegrateswithotherGoogleproducts
- Allowstudentstointeractwithotherstudents
- Learntouseanonlineclassroomplatform
- Providevideolessons
- Differentiatebetweenskilllevels

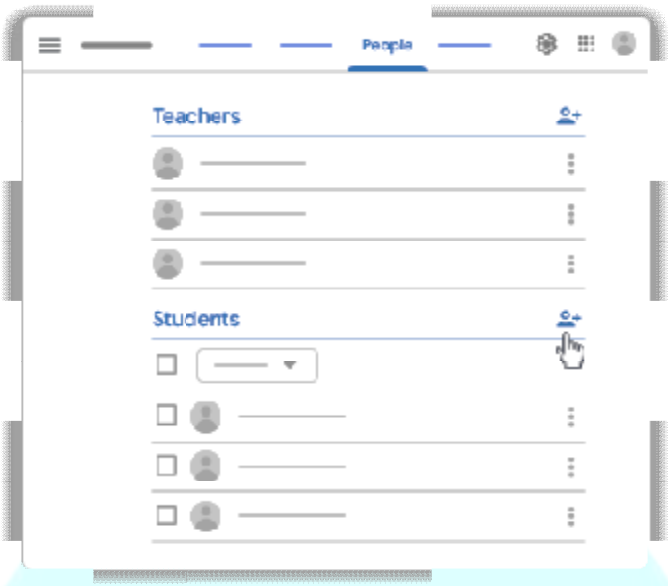
∨ Createaclassroom:

- **Step1 :**Open aWeb browserand go to classroom.google.com. You have to sign in with your Google Apps for Education account.
- **Step2 :**On theWelcomescreen,click the plus sign at thetop and choose Create Class as shown in the figure mentioned below.

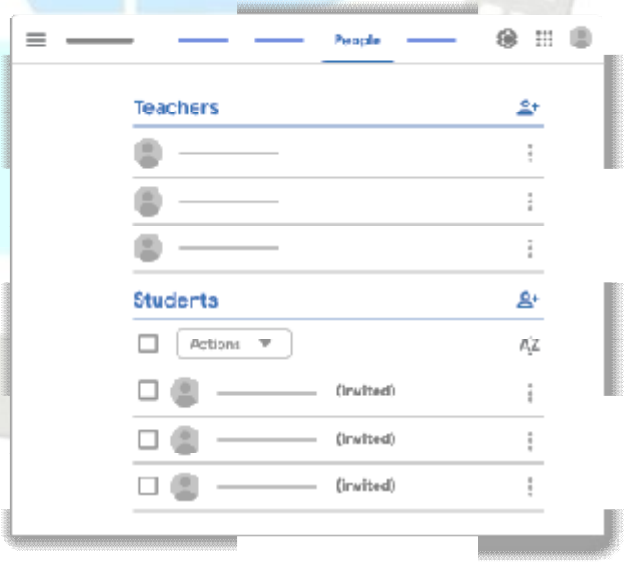
- **Step 3 :**In the Create a Class dialogue box, type in the Class Name andSection.
- **Step4:**Click Create.
- Fillthefollowingdetailsaccordingtoyourrequirement.

∨ Invitethestudents:

- **Step1 :**Gotoclassroom.google.com.
- **Step2:**Clicktheclassyouwanttoaddstudentsoragroupofstudents to.



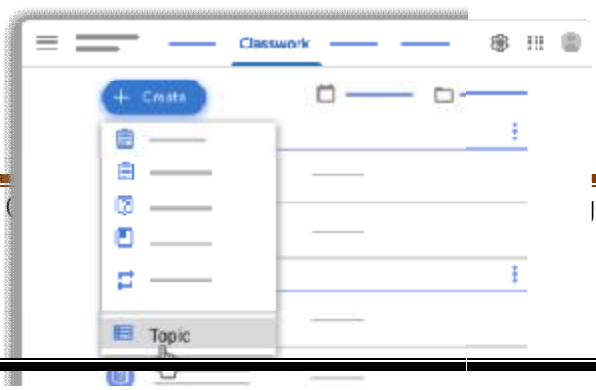
- **Step3:** Atthetop,clickPeopleandthenInvitestudentsInvite students.
- **Step4:** Enterthestudent'sorgroup'semailaddress.Asyouentertext,an autocomplete list might appear.
- **Step5:** UnderSearchresults,clickastudentoragroup.
- **Step 6 :** (Optional) To invite more students or groups, repeat steps 4 and 5.
- **Step7:** Click Invite.



After you email the invitation, the class list updates to show the names of invited students.

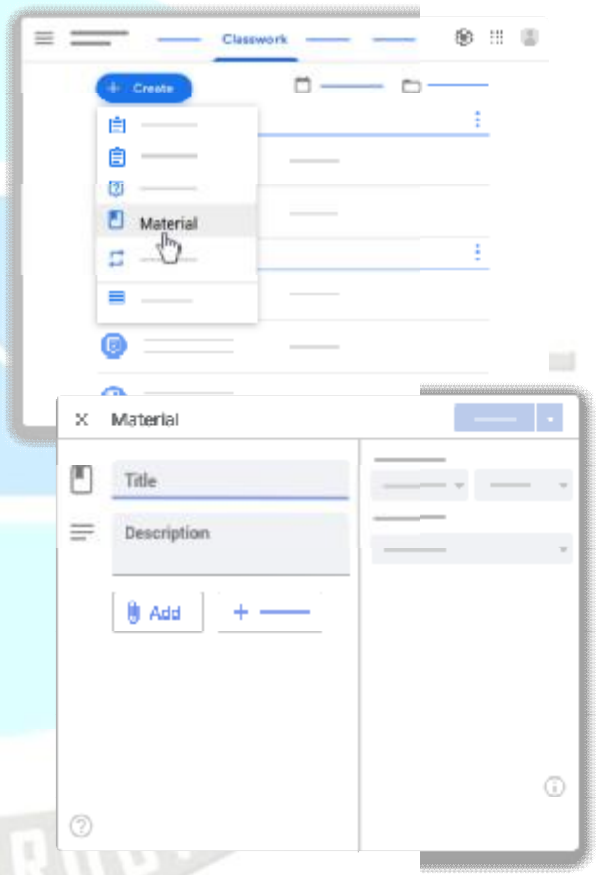
∨ Createtopic:

- **Step1 :** Gotoclassroom.google.com.
- **Step2:** Clicktheclassand then classwork.



- **Step3:**Atthetop,clickcreate and then topic
- **Step 4 :**Enter the topic name and click add.
- Studentsonlyseetopicswith published posts.

∨ Creatematerials:



- **Step 1 :** Go to classroom.google.com.
- **Step 2 :**Click the class and then classwork.
- **Step3:**Atthetop,clickcreate and then material.
- **Step 4 :** Enter a title and a description.

∨ Typesofmaterial:

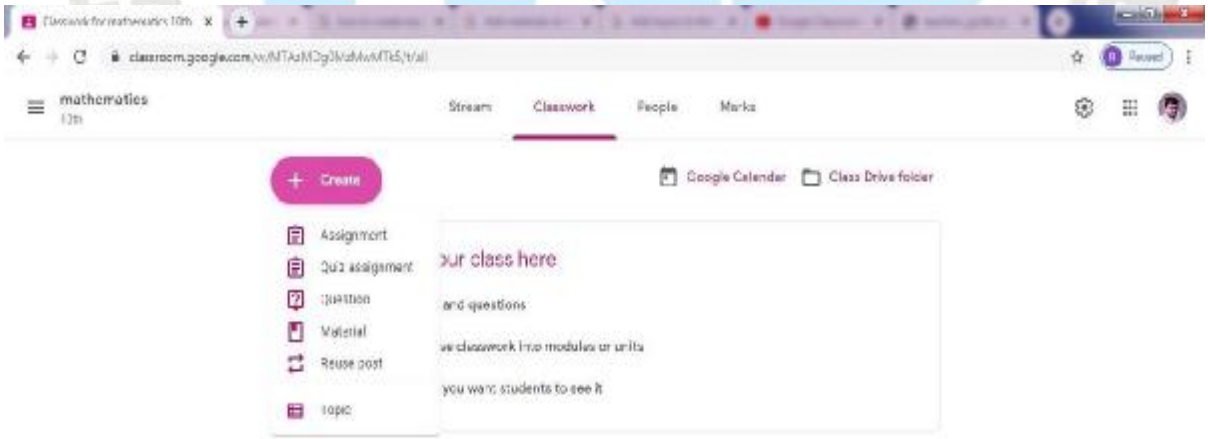
- GoogleClassroomgivesyoutheabilitytocreateandassignworkforyour students, all without having to print anything.
- Questions, essays, worksheets, and readings can all be distributed online and made easily available to your class.

∨ Quiz:

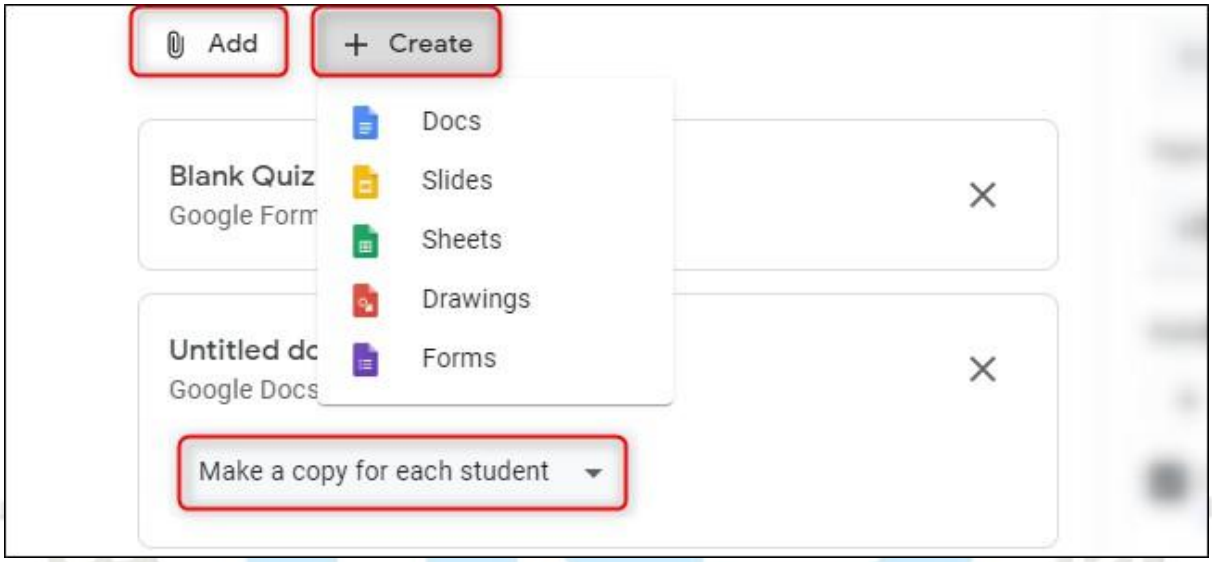
- GoogleClassroomisadigitalhubwherestudents,teachers,andsupporters of both can engage and collaborate.
- Youcancreateuser-friendlyquizzesandassignments,alongwithsupporting materials, in just a few clicks.
- AllyouneedisafreeGoogle account.

v Creatingaquiz:

- Togetstarted,openyourwebbrowser,andgoto classroom.google.com.
- Sign in to your Google account, and then either create a class or click an existing one.
- Onceyou'reinaclass,clickthe"Classwork"tab,click"Create," andthen select "Quiz Assignment.



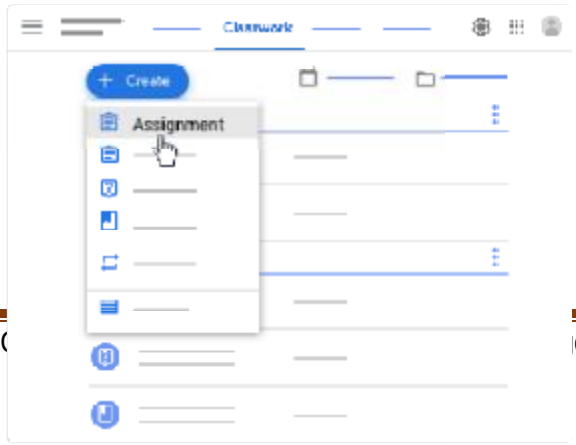
- Thequizassignmentformisidenticaltothebasicassignmentoption,with the addition of a blank Google Form that will serve as your quiz.
- Youcanuseboththeassignmentandquizagainlater.
- Inthequizassignmentmenu,giveyourquizatitle,andthenprovide additional instructions, if necessary.



- Click “Add” if you want to attach a file from Google Drive, a web link,your computer, or YouTube.
- You can also click “Create” to automatically create and attach a file from Google Docs, Slides, Sheets, Drawings, or Forms.
- Foranyadditionalattachments,clickthedrop-downmenuwithineach assignment to choose whether students can view or edit that file.
- Youcanalsochoosetomakecopiesofafileforeachstudent.
- Tochangethis,clickthedrop-downmenuontheright.
- You can then change your questions to short answers, checkboxes, drop-downs, grids, dates, or times.
- Youcanalsousethesidebarontherighttoaddorimportquestions, sections, or files.
- When your Quiz is ready, it appears in a list under the Classwork tab ofyour class.
- There,youcanalsoseehowmanystudentshaveturneditin.Click“View Assignment” to open a more detailed view.
- TheQuizoptioninGoogleClassroomisaneasywayforstudentsand teachers to engage, as well as assign and complete coursework.
- Youcanalsousetheseformstocreatesurveys,essays,and more.

∨ Assignment:

- **Step1 :**Gotoclassroom.google.com.
- **Step2:**Clicktheclassandthen Classwork.
- **Step3:**Atthetop,clickCreate and then Assignment.
- **Step 4 :**Enter the title and any

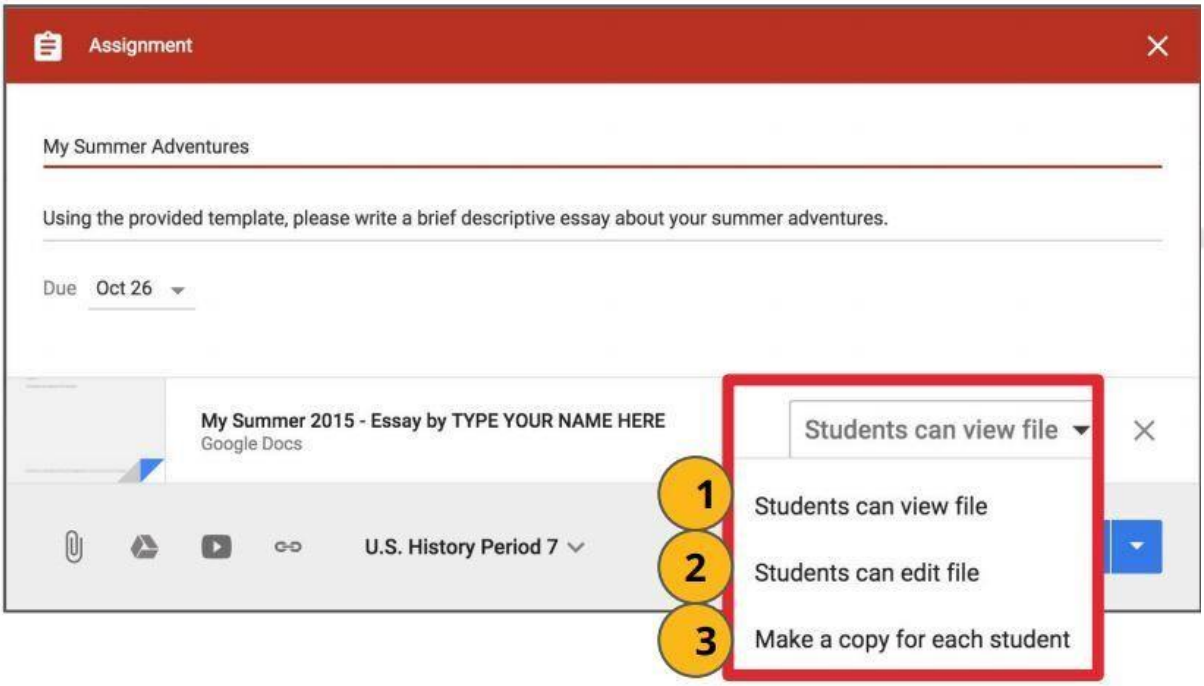


instructions.

- Here , you can create the assignmentforallstudentsorforindividualstudents.

ü **AssignmentswithGoogleDrivefiles:**

- When you add Google Docs, Google Slides, Google Sheets, or Google Drawingsfilesaspartofanassignment,youwillgetadditionaloptionsfor that assignment.



ð ***Studentcanviewfile*:**eachstudentisgivenaccesstoaview/read-only versionofthefile.

ð ***Studentcaneditfile*:**eachstudentisgivenaccesstoedit and collaborateontheSAMEfile.

ð ***Makeacopyforeachstudent*:**eachstudentisgivenanindividual, editable copy of the file inside their Google Drive.

v Grading:

- InClassroom,youcangiveanumericgrade,leavecomment-only feedback, or do both. You can also return assignments without grades.
- Youcangradeandreturnworkfrom:
  - ð TheStudentworkpage.
  - ð TheClassroomgradingtool.
  - ð TheGradespage.
- ForGradespageinstructions,gotoVieworupdateyourgradebook.
- You can download grades for one assignment or for all assignments in a class.

v Rubrics:

- InClassroom,youcanusearubrictogradeandgivefeedback.
- YoucangraderubricsfromtheStudentworkpageorthegradingtool.
- Afteryoustartgrading,youcan’teditordeletetheassignment'srubric.
- Fordetailsonhowstudentscancheckthеirrubrics,gotoCheckyourwork with rubrics.

2. Microsoft Teams

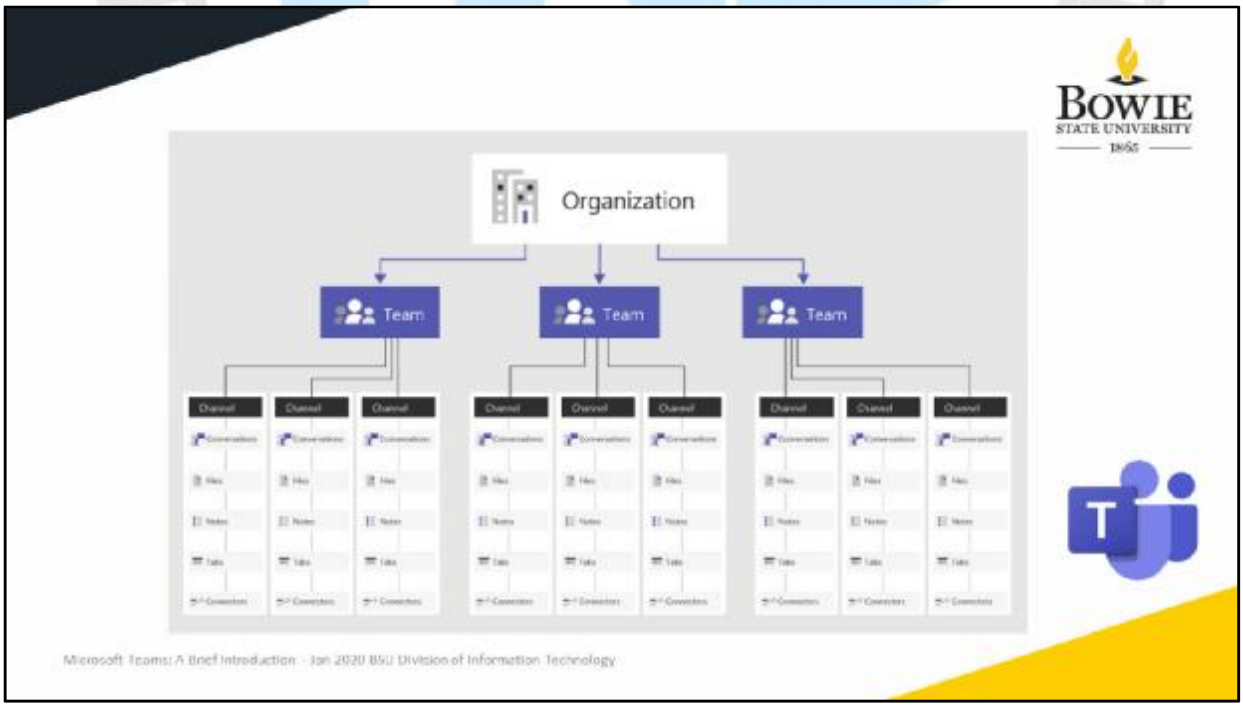
MicrosoftTeamsisacollaborationapp,releasedin2017aspartoftheOffice365cloud,th athelpsworkgroupscommunicateandstayorganized—allinoneplace.

Teamsservesasa huballowinggroupsto
chat,meet,sharefiles,coordinatetasks,andmore.

MicrosofthasdevelopedTeamsto replaceSkypefor
BusinessasthecorecommunicationsclientforOffice365,addingfunctionalityto

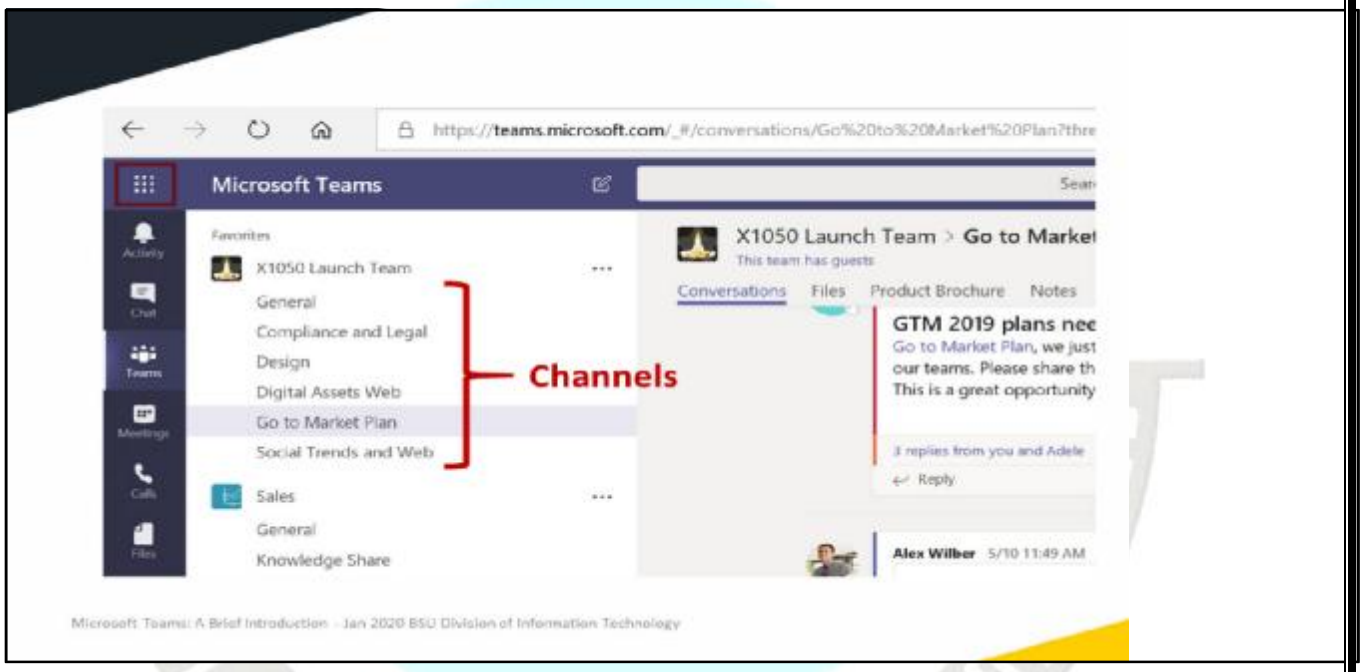
Accessibleonwebbrowsers,desktopapplication,andmobileapps.

- ***Structure of Microsoft teams***



This is a diagram of the Microsoft Teams structure on the enterprise level.AnorganizationcanhaveseveralTeams, eachwithorganizedcontent.

Every**Team** isdividedatthehighestlevelinto**Channels**,whicharededicatedsectionsrepresentingdepartments,projects,programs,topics,or othersubjectmatter.



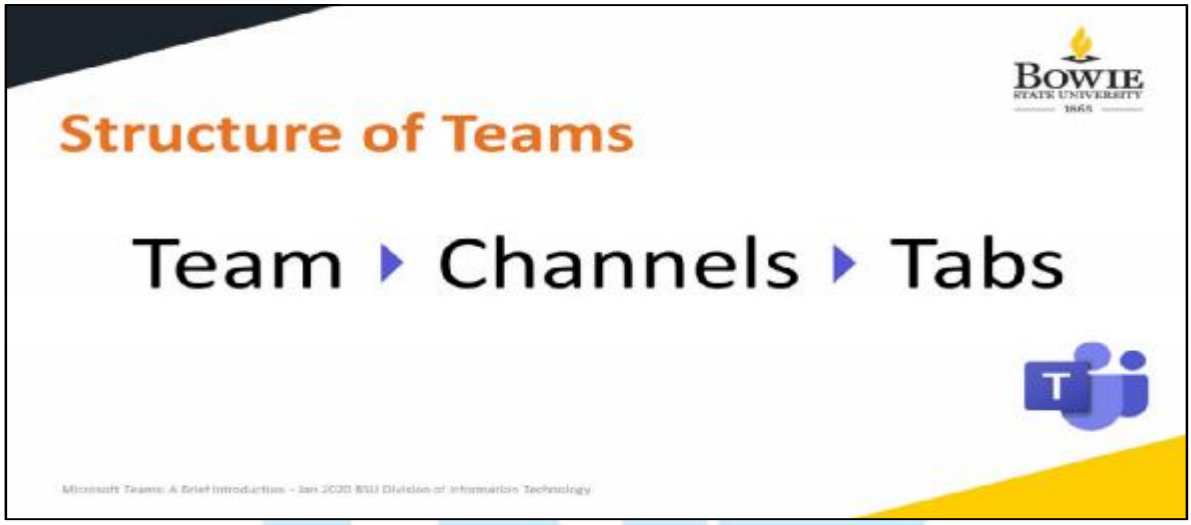
Thisisa screenshotofa **Team**anditslist of**Channels**

Channelskeepmessages(posts/conversations),files,apps,andothercontentorganizedwithinateam.

Teammemberscan follow specifiedChannelstoreceive notificationsof achannel'sactivity.

Channelsare dividedinto**Tabs**,which arelinksto variouscontentsuchasmessages(posts/conversations),files,apps,webpages,etc. insideandexternalto Team

This is a screenshot of a Channel's the default tabs (Conversations aka Posts, Files, andNotes)

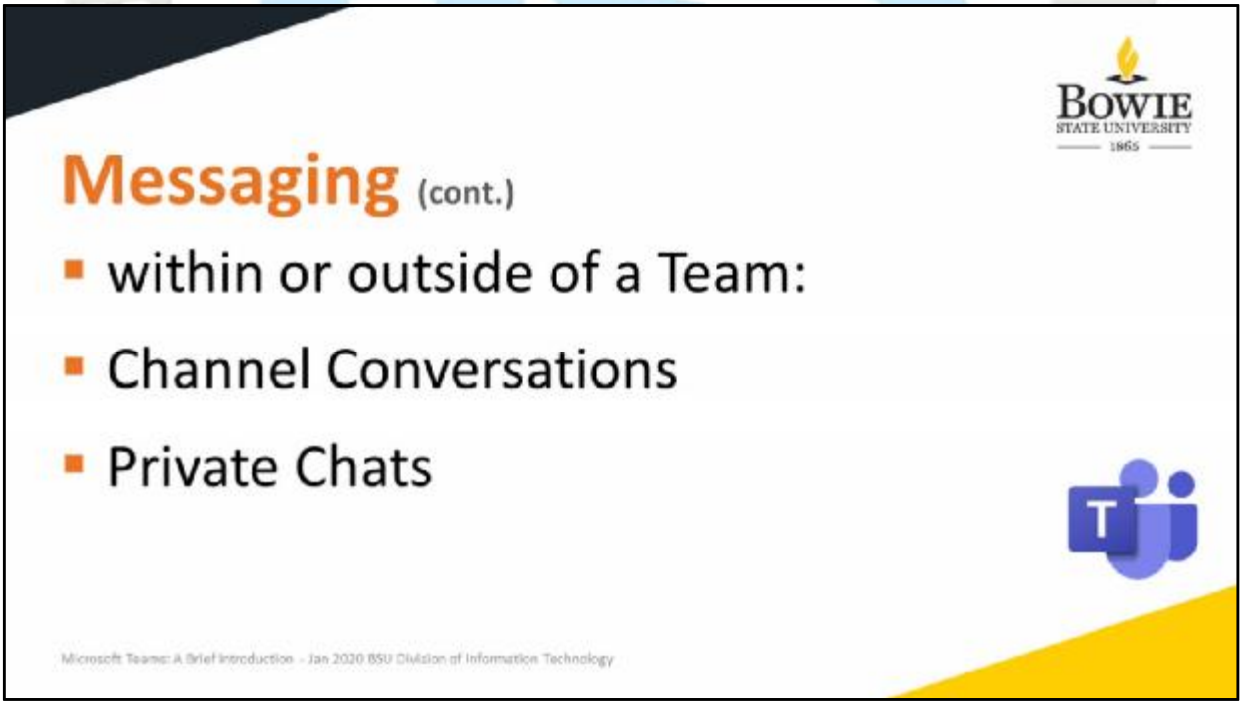


TorecapthestructureofMicrosoftTeams,TeamsaredividedintoChannels,andChannels organizescontent intoTabs.

ThefirstTabdisplayedbydefaultineveryChannelisPosts, whicharethreadedconversationsconducted inthatchannel.

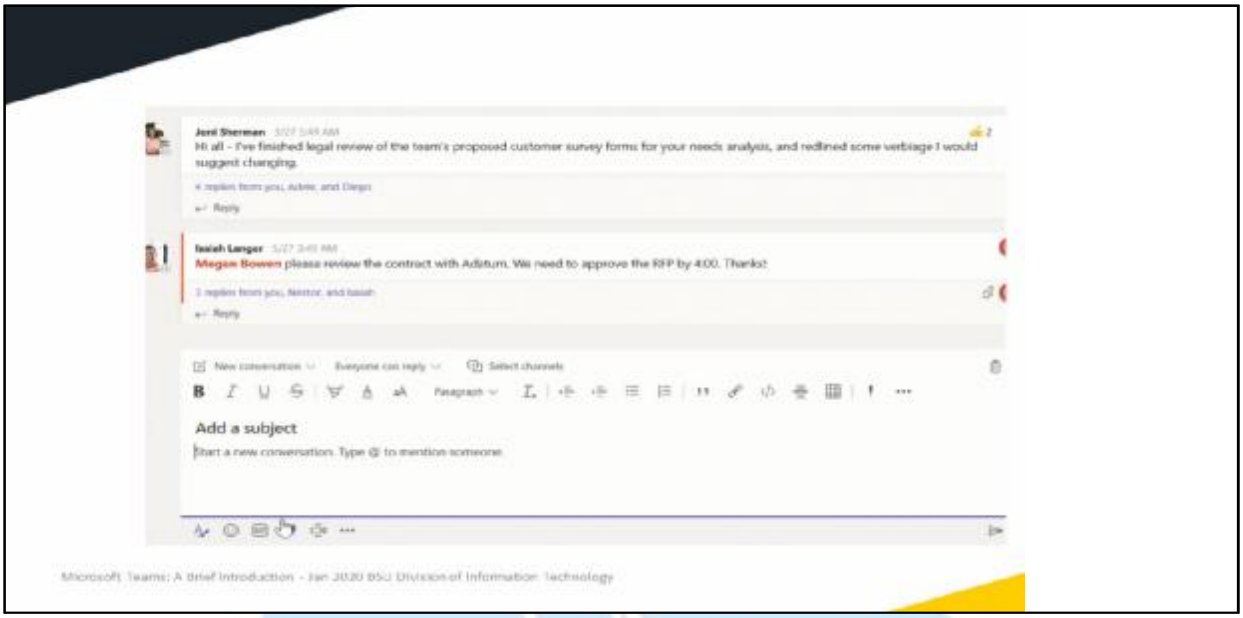
Conversationsareorganizedintothreads.Messagescanbetitledwithasubjectsimilartoe mailtokeepconversationsorganizedandeasilyidentified.

ConversationsremainintheChannelprovidingacentralizedhistoryofcommunication withinthatsubjectmatter.



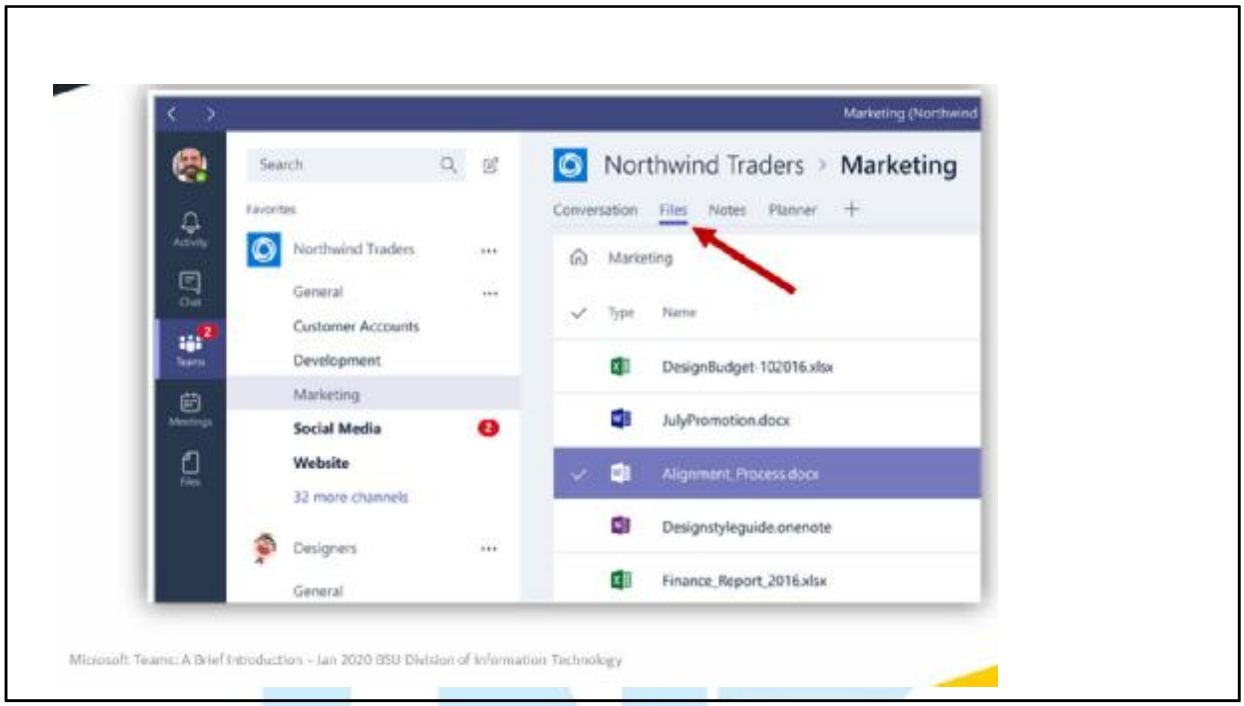
ConversationscanbeconductedinChannelswithmembersofyourteamoroutsideofatea mwithanyoneintheorganization,similartoSkypeforBusiness.Opencommunicationinit iatedwithinaTeam'sChannel,iscalledaChannelConversationandisvisiblebyanyTeam Member.Private one□on□oneorgroupconversationscanbeconductedoutsideofa

TeamusingChat,similartoSkypeforBusiness.Thesechatscanbeconductedwithanyone withinBSUandalsobelabeledtokeeporganized.

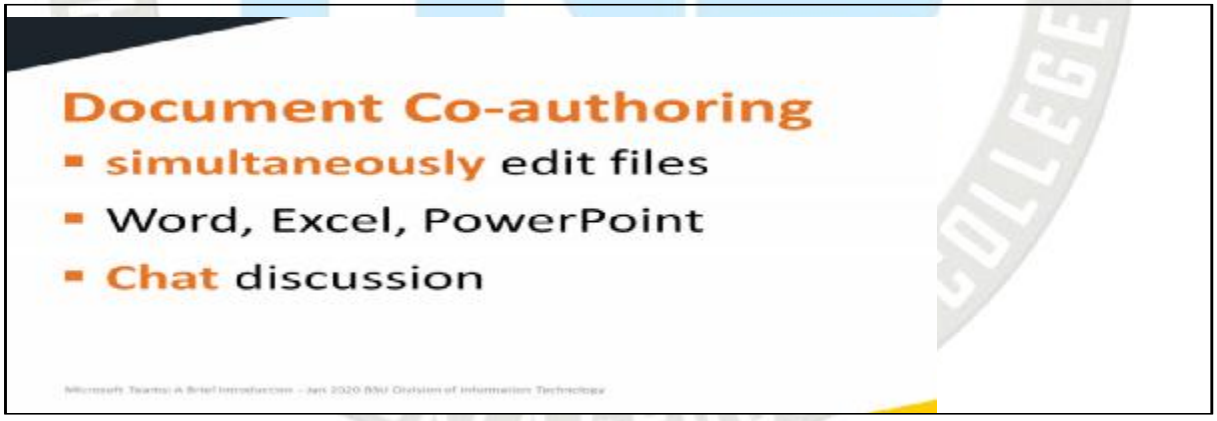


This isascreenshotofaconversation.

Team files are stored in the Team's Channels, under the Files Tab. Files are specificallystored in the Team's underlying SharePoint Document Library.Channel Files can beorganizedintofolders.

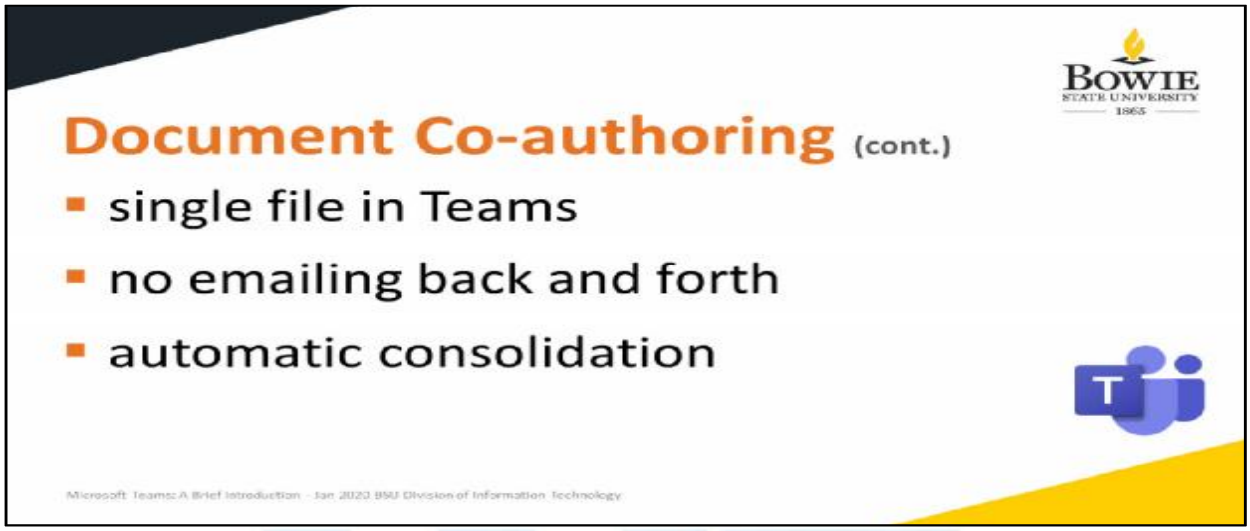


Thisis ascreenshotoftheFiles Tab.



SimilartoGoogleDocs,Teamsprovidestheabilitytosimultaneouslyeditin Word,Excela ndPowerPoint.Thisfunctionalityiscalled“Co□authoring”.

Co□authoringwithinTeamsalsoaddstheabilityforlivediscussioninaChat.



Co□authoringbeginswithstoringa fileina Team,theninvitingotherstocollaborateonit.

Insteadofdownloadingthefile,editing,andemailingitbacktotheoriginator,allteammemberscaneditthedocumentsimultaneously.

Whileeveryone isworkingonthefile,itremainscentrallylocatedinTeams,asopposedtomultiplecopiessentbackandforththroughemailrequiringthechoreofconsolidation.

Future topics to discuss will include the use of Microsoft Planner for team tasks and onlinemeetings.

Teamshasmanyadditionalfeatures

3.Google Meet

Google Meet is a video conferencing platform developed by Google. It allows users to host and join video meetings with colleagues, friends, or family members from anywhere with an internet connection. Google Meet offers features such as screen sharing, real-time captions, and the ability to schedule and join meetings directly from Google Calendar. It became especially popular during the COVID-19 pandemic as more people shifted to remote work and virtual communication.

Google Meet: Google Meet is a powerful video conferencing tool that enables teachers to host virtual classes, conduct meetings with students or colleagues, and

facilitate collaborative learning experiences. With Google Meet, teachers can:

1. Hosting Meetings:

Teachers can easily start a meeting by creating a new session or joining an existing one.

They can schedule meetings in advance through Google Calendar and send invitations to participants.

Meetings can accommodate up to hundreds of participants, making it suitable for both small classes and large lectures.

2. Video and Audio Quality:

Google Meet offers high-definition video and crystal-clear audio, ensuring a smooth communication experience.

It automatically adjusts the video resolution based on the participants' internet connection speeds to maintain optimal performance.

3. Screen Sharing:

Teachers can share their entire screen or select specific windows or applications to share with participants.

This feature is useful for presenting slideshows, demonstrating software or websites, or showing educational videos.

4. Real-Time Captions:

Google Meet provides automatic captions in real-time, helping to improve accessibility for participants who are deaf or hard of hearing.

Captions can be enabled by the host or participants individually, making it easier for everyone to follow along.

5. Chat and Q&A:

Participants can use the chat feature to send text messages to the entire group or privately to specific individuals.

Teachers can use the chat for interactive discussions, Q&A sessions, or to share links and resources with students.

6. Polls and Surveys:

Google Meet allows hosts to create and conduct polls or surveys during meetings. This feature can be used for engaging students, gathering feedback, or assessing

comprehension in real-time.

7. Breakout Rooms:

Teachers can divide participants into smaller groups using breakout rooms for discussions, group activities, or collaborative projects.
They can join each breakout room to provide guidance and support as needed, fostering teamwork and peer learning.

8. Security and Privacy:

Google Meet includes built-in security features such as encryption, meeting codes, and participant entry controls to prevent unauthorized access.
Hosts can control who can join meetings, mute or remove participants, and manage screen sharing permissions for added security.

9. Recording Meetings:

Teachers have the option to record meetings for future reference or for students who couldn't attend the live session.
Recorded meetings are automatically saved to Google Drive, where they can be shared with participants or kept for personal use.

10. Integration with Google Workspace:

Google Meet seamlessly integrates with other Google Workspace apps such as Google Calendar, Gmail, and Google Drive.
This integration streamlines workflows, allowing teachers to schedule meetings, send invitations, and share resources directly from their Google Workspace accounts.

Overall, Google Meet provides a comprehensive set of features designed to support online teaching and learning, making it a valuable tool for educators in both synchronous and asynchronous learning environments.

4. Chat GPT

ChatGPT is a natural language processing chatbot driven by generative AI that allows you to have human-like conversations to complete various tasks. For example, the AI tool can answer questions and assist you with tasks such as composing emails, essays, and code.

introduce ChatGPT:

It's currently open to use by the public for free. A paid subscription version called ChatGPT Plus launched at the beginning of February 2023 which gives users access to premium features, such as OpenAI's latest models.

ChatGPT was created by OpenAI, an AI research company. The company launched ChatGPT on November 30, 2022. OpenAI is also responsible for DALL-E 2 and DALL-E 3, popular AI image generators, and Whisper, an automatic speech recognition system.

Used as a teacher support tool:

ChatGPT can be a valuable tool in educational settings, providing support to both teachers and students in various ways. Here are some ways ChatGPT can be used as a teacher support tool:

1. **Lesson Planning Assistance**: ChatGPT can help teachers brainstorm and generate ideas for lesson plans, activities, and instructional materials. By providing prompts or specific topics, teachers can receive suggestions and inspiration from ChatGPT to enhance their teaching materials.

2. **Content Creation**: Teachers can use ChatGPT to create educational content such as quizzes, study guides, and lecture notes. By inputting prompts or questions, they can receive well-written responses that can be used directly or as a basis for further refinement.

3. **Grading Support**: ChatGPT can assist teachers in grading assignments, essays, and other written assessments. While it may not replace human grading entirely, it can help with initial feedback or provide suggestions for improvement based on predefined criteria.

4. **Student Support Resources**: ChatGPT can serve as a resource for students, providing answers to common questions, explanations of concepts, and additional learning materials. Teachers can integrate ChatGPT into learning platforms or provide access to it as a supplemental tool for students.

5. **Personalized Learning**: ChatGPT can support personalized learning experiences by generating tailored learning materials or adaptive quizzes based on students' individual needs and preferences. Teachers can use ChatGPT to create custom learning paths or provide targeted assistance to students with specific learning goals.

6. **Language Support**: For language teachers or ESL (English as a Second Language) instructors, ChatGPT can help students practice language skills through conversation practice, grammar correction, and vocabulary expansion exercises.

7. **Professional Development**: ChatGPT can provide teachers with access to a vast repository of educational resources, research articles, and teaching strategies. It can assist with professional development by answering questions, offering suggestions, and facilitating discussions on pedagogical topics.

8. **Accessibility Tools**: ChatGPT can be used to create accessible learning materials for students with disabilities. For example, it can convert text into alternative

formats such as audio or braille, providing greater accessibility to educational content.

Overall, ChatGPT can serve as a versatile tool to support teachers in various aspects of their work, from instructional design and content creation to assessment and student support. By leveraging the capabilities of AI-driven conversational agents, teachers can enhance their teaching effectiveness and provide more personalized learning experiences for their students.

Some key aspects of chatGPT:

1. **Natural Language Understanding**: ChatGPT can understand and respond to a wide range of topics and queries posed to it in natural language. It processes input text to derive meaning and context, enabling it to generate relevant and coherent responses.

2. **Generative Model**: It's a generative model, meaning it can produce human-like text based on the input it receives. It doesn't just retrieve pre-programmed responses but generates responses on the fly, drawing from its training data and understanding of language patterns.

3. **Deep Learning**: ChatGPT is built using deep learning techniques, specifically transformers. These models have revolutionized natural language processing tasks by capturing long-range dependencies in text and effectively modeling context.

4. **Pre-training and Fine-tuning**: ChatGPT is pre-trained on a large corpus of text data to learn the nuances of language. Additionally, it can be fine-tuned on specific datasets or tasks to improve its performance in particular domains or applications.

5. **Scalability**: The architecture of ChatGPT allows for scalability, meaning it can be trained on increasingly larger datasets and can potentially become more proficient at understanding and generating human-like text over time.

6. **Applications**: ChatGPT has various applications, including but not limited to customer service, language translation, content creation, and personal assistance. It

can be integrated into chatbots, virtual assistants, and other interactive systems to enhance user experiences.

7. **Ethical Considerations**: OpenAI emphasizes responsible and ethical use of AI technologies like ChatGPT. This includes addressing concerns related to bias, privacy, and misuse, as well as promoting transparency about the capabilities and limitations of AI systems.

ChatGPT represents a significant advancement in AI-driven conversational agents, offering the ability to engage in more natural and contextually relevant interactions with users.

2.3 Introductiontoonlinee-learningplatforms

∨ Introduction:

The field of E-learning has gained increasing popularity, and for the right reasons. Over the last few years, intuitive learning software has seen leaps in offering a complete learning experience that is fun, interactive, and ultimately engaging.

Aonlinelearningplatformisanintegratedsetofinteractiveonlineservices thatprovidetrainers,learners,andothersinvolvedineducationwithinformation, toolsandresourcestosupportandenhanceeducationdeliveryand management. One type of E-Learning platform is a learning management system (LMS).

There are many E-Learning companies out there that offer learning platforms. Some of these platforms allow you to host and sell online courses, allowingyoutorunyourownbusiness.Otherplatformssimplyofferaninterface in which users can interact with your content, but might not be the best fit for your audience.

E-learning courses can exist in many forms, using different types of technologies. Commonly used in organizations and corporations, e-learning can helplearnerscompletetrainingandeducationobjectiveswitheaseandflexibility as compared to traditional classroom-based learning.

E-learningcoursescanuseavarietyofcontent,includingaudioandvideo lectures, presentations, assessment, assignments, polls, surveys, reading materials, multiple choice question answers and more.

There are many e – learning platforms available in India. In this unit , we will discuss some of them.

v SWAYAM:

- An initiative of Government of India for the students pursuingeducation fromclass9thto12thandalsofortheaspirantsseekingundergraduateand post-graduate level degree, SWAYAM facilities study material at one destination.
- SWAYAMisaprogrammeinitiatedbyGovernmentofIndiaanddesigned to achieve the three cardinal principles of Education Policy viz., access, equity and quality.
- The objective of this effort is to take the best teaching learning resources to all, including the most disadvantaged.
- SWAYAMseekstobridgethedigitaldivideforstudentswhohavehitherto remaineduntouchedbythedigitalrevolutionandhavenotbeenabletojoin the mainstream of the knowledge economy.
- Students can access study material in the form of Video lectures, reading

material, self-assessment tests, online discussions and doubt sessions.

- The portalis connected to national coordinators such as AICTE, NCERT, IGNOU, UGC, NPTEL, NIOS, IIMB, NITTTR, and CEC for delivering updated and excellent quality content to the aspirants.
- Students registering forthecourses at SWAYAM need not payanyfee as the course is free of cost, however to get the certification, registration is required for which a minimal fee has to be paid.

v DIKSHA:

- DIKSHA means Digital Infrastructure for Knowledge Sharing which is the National Teacher Platform, an initiative oftheMHRD,andisaccessibleonlineat https://diksha.gov.in.
- The Ministry of HRD has launched National Digital Infrastructure for Teachers named DIKSHA portal to equip teachers from 1st class to 12th class into the world of e-learning.
- The platform is available for both teachers and students requiring learning material.
- DIKSHA is one of a unique app that requires students and teachers to SCANtheQRcodeavailableinthebookinordertoaccesstheprescribed learning material.
- With more than 80000 e-Books solely created to train and enhance the learning of Class 12th students, the aim of CBSE, NCERT and States or UnionTerritoriesistoensurethatthestudentsdonotmissoutonlearning in case

they miss out on physical classroom learning.

- Theportalisavailableinmultiplelanguagesforstudents.

∨ NROER:

- NROER (National Repository of Open Educational Resources) is a collaborativeplatform,which brings together everyone interested in school and teacher education.

- Initiated by the Department of School Education and Literacy, MinistryofHumanResource Development, Government of India and managed by the Central Institute ofEducationalTechnology,NationalCouncilofEducationalResearchand Training, the Repository runs on the MetaStudio platform, an initiative of the Gnowledge Labs, Homi Bhabha Centre for Science Education.
- With approximately 16000 registered users, and 14527 e-learning resources, NROER is one of an excellent initiative launched by the Ministry of HRD.
- Students visiting NROR platform will get an exposure to e-libraries, e-books, e-courses, chance to participate in events online, and theme basededucation.
- Apartfromthis,studentscanaccessthewebsiteinbothHindiandEnglish language.
- In fact, there is a feature through which learning of students can be out to test through ‘assignments’ also.

∨ Advantagesofe–learning:

- E-learninghelpsmake learningmore accessible for learnersaround the

globe.

- In education, it brings learning opportunities to previously disadvantaged groups.
- Inbusiness,ithelpsuniteandtrainanincreasinglyglobalworkforce.

- When learning materials are available online, learners can access their course material from anywhere and at any time using any device.
- Learnerscanalsostartalearningsessionononedevice(sayasmartphone while they are traveling) and continue the same course on another device (say a tablet or laptop at home), making it easier to fit learning into busy lives.
- E-learningsavestimeandmoney.
- Onecanabletolinkthevariousresourcesinseveralvarying formats.
- Duetoitsconvenienceandflexibility, theresourcesareavailablefrom anywhere and at any time.
- Everyone, who are part time students or are working full time, can takeadvantage of web-based learning.
- Web-basedlearningpromotesactiveandindependentlearning.
- Through discussion boards and chats, you are able to interact with everyone online and also clear your doubts if any.
- The video instructions that are provided for audio and video learning can be rewound and seen and heard again and again if you do not happen to understand the topic first time around.

∨ Disadvantagesofe–learning:

- Themainonebeingthatyougetknowledgeonlyonatheoreticalbasisand whenitcomestoputtingtousewhateveryouhavelearnt,itmaybealittle different. The face-to-face learning experience is missing, which may

matter to some of you.

- Most of the online assessments are limited to questions that are only objective in nature.
- There is also the problem of the extent of security of online learning programs.
- The authenticity of a particular student's work is also a problem as online just about anyone can do a project rather than the actual student itself.
- The assessments that are computer marked generally have a tendency of being only knowledge-based and not necessarily practicality-based.
- E-LearningcancausesocialIsolation.
- E-Learningrequiresstrongself-motivationandtimemanagementskills.
- Onlineinstructorstendtofocusontheoryratherthanpractice.
- Lackofaccreditation&qualityassuranceinonlineeducation.
- Lackofcommunicationalskilldevelopmentinonlinestudents.
- Cheatingpreventionduringonlineassessmentsiscomplicated.
- Onlinelearningisinaccessibletothecomputerilliteratepopulation.
- E-Learningislimitedtocertaindisciplines.
- E-Learninglacksface-to-facecommunication.

2.4 IntroductionTo Different Methods Uses

1.google search

∨ *introduction*

Google Search (also known simply as **Google** or **Google.com**) is a search engine operated by Google. It allows users to search for information on the Internet by entering keywords or phrases. Google Search uses algorithms to

analyze and rank websites based on their relevance to the search query. It is the most popular search engine.

The order of search results returned by Google is based, in part, on a priority rank system called "PageRank". Google Search also provides many different options for customized searches, using symbols to include, exclude, specify or require certain search behaviour, and offers specialized interactive experiences, such as flight status and package tracking, weather forecasts, currency, unit, and time conversions, word definitions, and more.

The main purpose of Google Search is to search for text in publicly accessible documents offered by web servers, as opposed to other data, such as images or data contained in databases. It was originally developed in 1996 by Larry Page, Sergey Brin, and Scott Hassan.In 2011, Google introduced "Google Voice Search" to search for spoken, rather than typed, words. In 2012, Google introduced a semantic search feature named Knowledge Graph.

Analysis of the frequency of search terms may indicate economic, social and health trends.Data about the frequency of use of search terms on Google can be openly inquired via Google Trends and have been shown to correlate with flu outbreaks and unemployment levels, and provide the information faster than traditional reporting methods and surveys. As of mid-2016, Google's search engine has begun to rely on deep neural networksworldwide.

Google offers various tools and features that can be particularly useful for teachers to enhance their instructional practices, curriculum development, and classroom management. Here are some Google tools and features tailored for educators:

1. **Google Classroom**: Google Classroom is a learning management system that enables teachers to create, distribute, and manage assignments, grades, and feedback. It also facilitates communication and collaboration between teachers and students.

2. **Google Drive**: Google Drive provides cloud storage for documents, spreadsheets, presentations, and other files. Teachers can use Google Drive to store and share instructional materials, lesson plans, and student assignments securely.

3. **Google Docs, Sheets, and Slides**: These productivity tools allow teachers to create, edit, and collaborate on documents, spreadsheets, and presentations in real-time. They are particularly useful for creating lesson materials, interactive activities, and collaborative projects.

4. **Google Forms**: Google Forms enables teachers to create surveys, quizzes, and assessments quickly and easily. Teachers can use Forms to gather feedback, assess student understanding, and collect data for analysis.

5. **Google Meet**: Google Meet is a video conferencing tool that allows teachers to host virtual classes, meetings, and office hours. It supports features such as screen sharing, chat, and live captions, making it suitable for synchronous remote teaching.

6. **Google Earth and Google Maps**: These tools provide interactive maps and satellite imagery that teachers can use to enhance geography lessons, explore historical sites, and facilitate virtual field trips.

7. **Google Scholar**: Google Scholar is a specialized search engine for academic literature, including scholarly articles, theses, and research papers. Teachers can use Google Scholar to find relevant resources for lesson planning, research projects, and professional development.

8. **Google Arts & Culture**: This platform offers access to a vast collection of artworks, cultural artifacts, and historical exhibits from museums and cultural institutions worldwide. Teachers can use Google Arts & Culture to enrich art, history, and cultural studies curriculum.

9. **Google Keep**: Google Keep is a note-taking app that allows teachers to create and organize notes, lists, and reminders. Teachers can use Keep to jot down ideas, keep track of tasks, and manage to-do lists for classroom activities and projects.

10. **Google for Education Training Center**: This online platform provides free training and resources for educators to learn how to effectively integrate Google tools into their teaching practice. It offers courses, tutorials, and certification programs designed specifically for educators.

These Google tools and features can help teachers streamline their workflows, enhance collaboration, and create engaging learning experiences for their students.

2.Hacking

Hacking is the process of finding vulnerabilities in computer systems or networks and exploiting them to gain unauthorized access or perform unauthorized actions. It's important to note that hacking can be both legal and illegal, depending on the context and the intentions of the individual.

Here are some key points about hacking:

1. **Types of Hackers**: There are different types of hackers:

- **White Hat Hackers**: Also known as ethical hackers, they use their skills to find security weaknesses in systems and help organizations improve their security.
- **Black Hat Hackers**: These hackers exploit security vulnerabilities for malicious purposes, such as stealing sensitive information, disrupting services, or causing damage.
- **Gray Hat Hackers**: They may engage in activities that are not entirely ethical but not necessarily malicious either. Their motivations can vary.

2. **Methods of Hacking**: Hacking techniques can range from simple to highly sophisticated. Some common methods include:

- **Phishing**: Sending deceptive emails or messages to trick individuals into revealing sensitive information like passwords or financial details.

- **Brute Force Attacks**: Trying every possible combination of passwords until the correct one is found.
- **SQL Injection**: Exploiting vulnerabilities in web applications to manipulate a website's database.
- **Social Engineering**: Manipulating people into divulging confidential information or performing actions that compromise security.
- **Malware**: Software designed to infiltrate or damage a computer system, often spread through email attachments, infected websites, or removable media.

3. **Ethical Considerations**: Ethical hackers play a crucial role in improving cybersecurity by identifying and fixing vulnerabilities before malicious hackers can exploit them. However, it's important for ethical hackers to obtain proper authorization before testing systems and to abide by legal and ethical standards.

4. **Legal Ramifications**: Engaging in hacking activities without proper authorization is illegal and can lead to severe consequences, including fines and imprisonment. Even unintentional unauthorized access to computer systems can have legal repercussions.

5. **Defensive Measures**: Organizations and individuals can take several measures to protect themselves against hacking, such as using strong, unique passwords, keeping software up to date, implementing firewalls and antivirus software, and educating users about cybersecurity best practices.

- Hacking can have several applications in education, both positive and negative. Here are some ways in which hacking can be used in education:

1. **Ethical Hacking Courses**: Many educational institutions offer courses and programs in ethical hacking or cybersecurity. These courses teach students how to identify vulnerabilities in computer systems and networks, as well as how to secure them. Ethical hacking education can help train cybersecurity professionals who play a crucial role in defending against malicious hackers.

2. **Cybersecurity Competitions**: Schools and universities often organize cybersecurity competitions, such as capture the flag (CTF) events, where students can apply their hacking skills in a controlled and ethical environment.

These competitions encourage teamwork, problem-solving, and hands-on learning in cybersecurity.

3. **STEM Education**: Hacking can be integrated into STEM (science, technology, engineering, and mathematics) education to teach students about computer science, programming, networking, and cybersecurity concepts. Hands-on hacking activities can make learning more engaging and practical for students, fostering their interest in technology and cybersecurity careers.

4. **Penetration Testing Labs**: Educational institutions may set up penetration testing labs where students can practice ethical hacking techniques in a safe and controlled environment. These labs simulate real-world networks and systems, allowing students to gain practical experience in assessing and securing computer systems.

5. **Awareness and Prevention**: Educators can use hacking examples to raise awareness among students about cybersecurity threats and best practices. By understanding how hackers operate and the potential consequences of security breaches, students can learn to protect themselves and their organizations against cyber attacks.

6. **Research and Innovation**: Hacking techniques and principles can inspire research and innovation in cybersecurity education. Researchers may explore new methods for detecting and preventing cyber threats, as well as developing tools and technologies to enhance cybersecurity defenses.

However, it's important to emphasize the ethical and legal aspects of hacking in educational settings. Students should be taught the importance of using their hacking skills responsibly and ethically, and they should understand the legal implications of unauthorized hacking activities. Educational institutions should provide proper supervision and guidance to ensure that hacking education is conducted in a safe and ethical manner.

3.Copyright Infringement

Copyright infringement refers to the unauthorized use, reproduction, distribution, or display of copyrighted material without the permission of the copyright holder. This violation of copyright law can occur in various forms, including copying text, images, music, videos, software, and other creative works.

Here are some key points about copyright infringement:

1. **Protected Works**: Copyright protection applies to original works of authorship fixed in a tangible medium of expression. This includes literary works, music, movies, photographs, software code, and other creative works. Copyright protection is automatic upon creation of the work and generally lasts for the life of the author plus an additional period of time.

2. **Exclusive Rights**: Copyright holders have exclusive rights to reproduce, distribute, perform, display, and create derivative works based on their copyrighted material. Anyone who wishes to use copyrighted material in these ways must obtain permission from the copyright owner, typically through a license agreement.

3. **Fair Use**: Fair use is a legal doctrine that allows for the limited use of copyrighted material without permission from the copyright owner under certain circumstances, such as for purposes of criticism, comment, news reporting, teaching, scholarship, or research. However, the determination of fair use is based on a case-by-case analysis, considering factors such as the purpose and character of the use, the nature of the copyrighted work, the amount and substantiality of the portion used, and the effect of the use upon the potential market for the copyrighted work.

4. **Digital Copyright Infringement**: With the rise of the internet and digital technology, copyright infringement has become more prevalent, especially through unauthorized sharing and distribution of digital media files, such as music, movies, and software. File-sharing networks, streaming websites, and peer-to-peer networks are common platforms for digital copyright infringement.

5. **Consequences**: Copyright infringement can have legal consequences, including injunctions, damages, and in some cases, criminal penalties. Copyright holders

can take legal action against infringers to enforce their rights and seek remedies for the unauthorized use of their copyrighted material.

To avoid copyright infringement, individuals and organizations should respect the rights of copyright holders, obtain proper licenses for the use of copyrighted material when necessary, and adhere to applicable copyright laws and regulations. Additionally, creators should consider registering their works with the appropriate copyright office to strengthen their legal protections and enforceability.

4.Plagiarism

Plagiarism is the act of using someone else's words, ideas, or creative work without giving proper credit to the original author or creator. It involves presenting the work of others as one's own, whether intentionally or unintentionally. Plagiarism can occur in various forms, including:

1. **Verbatim Plagiarism**: This involves directly copying someone else's words or sentences without quotation marks and proper attribution. Even if only a small portion of the text is copied word for word, it still constitutes plagiarism.

2. **Paraphrasing Plagiarism**: Paraphrasing involves rephrasing someone else's ideas or writing in your own words. However, if the structure and wording remain too similar to the original source without proper citation, it can still be considered plagiarism.

3. **Idea Plagiarism**: Plagiarism isn't limited to copying text; it also applies to stealing someone else's ideas or concepts without acknowledgment. Even if you express the ideas in your own words, failing to credit the original source is still considered plagiarism.

4. **Self-Plagiarism**: This occurs when a person reuses their own previously published work without proper citation or acknowledgment. While it's not unethical to build upon one's own ideas, it's essential to properly attribute the original work to avoid misleading readers or claiming undue credit.

Plagiarism can have serious consequences in academic, professional, and creative settings. It undermines the integrity of scholarly research, diminishes the credibility of academic work, and violates ethical standards of attribution and honesty. In academic institutions, plagiarism can lead to academic penalties, such as failing grades, expulsion, or other disciplinary actions. In

professional and creative fields, it can damage reputations, lead to legal disputes, and result in financial losses.

To avoid plagiarism, it's crucial to:

- Always cite the sources of information, ideas, or quotes used in your work.
- Use quotation marks or indentation for verbatim text taken from another source.
- Properly paraphrase ideas by rephrasing them in your own words and citing the original source.
- Acknowledge collaborations or contributions from others.
- Familiarize yourself with citation styles and follow them consistently.
- Use plagiarism detection tools to check your work before submission.

Ultimately, upholding academic and ethical standards in research and writing requires a commitment to honesty, integrity, and responsible attribution of sources.

- Plagiarism in education is a significant concern that can undermine the integrity of academic institutions and compromise the learning process. Here's how plagiarism manifests in educational settings and its impact:

1. **Student Assignments**: One of the most common forms of plagiarism in education occurs when students submit assignments, papers, essays, or projects that contain content copied from external sources without proper citation. This can include verbatim copying, paraphrasing without attribution, or presenting someone else's ideas as their own.

2. **Exams and Tests**: In some cases, students may engage in cheating during exams or tests by copying answers from other students or unauthorized sources. This can involve sharing information during exams, using cheat sheets, or accessing external resources on electronic devices.

3. **Online Learning**: With the rise of online learning platforms and resources, plagiarism in education has become more prevalent. Students may copy and paste text from websites, online articles, or other digital sources without acknowledging the original authors. Additionally, online forums and discussion boards can be susceptible to plagiarism if students share answers or responses without proper attribution.

4. **Group Projects**: Plagiarism can also occur in group projects when one or more group members contribute little or no original work and instead rely on the

efforts of others. This can create unfairness within the group and compromise the learning outcomes for all members involved.

5. **Consequences**: Plagiarism undermines the principles of academic integrity, honesty, and intellectual property rights. In educational institutions, plagiarism is often considered a serious offense and can result in disciplinary actions, such as failing grades, academic probation, suspension, or even expulsion. Additionally, it can damage the reputation of students and institutions and erode trust between students and educators.

To address plagiarism in education, institutions employ various strategies, including:

- Educating students about the importance of academic integrity, proper citation, and avoiding plagiarism.
- Providing guidelines and resources on citation styles and referencing techniques.
- Incorporating discussions and activities on ethics and plagiarism awareness into the curriculum.
- Utilizing plagiarism detection software to identify instances of plagiarism in student submissions.
- Implementing clear policies and consequences for academic dishonesty and plagiarism.

By promoting a culture of academic integrity and ethical scholarship, educational institutions can mitigate the prevalence of plagiarism and uphold the standards of excellence and honesty in education.

UNIT -3
INTRODUCTION TO ADVANCED PEDAGOGY

3.1 Advanced -Pedagogy

WhatisPedagogy?

Pedagogy, most commonly understood as the approach to teaching, is thetheory and practice of learning, and how this process influences, and isinfluenced by, the social, political and psychological development of learners.Pedagogy,takenasanacademicdiscipline,isthestudyofhowknowledgeandskillsareimpartedinaneducationalcontext,anditconsiderstheinteractionsthattake place duringlearning.

Pedagogyisoftendescribedastheactofteaching.Thepedagogyadoptedbyteachers, shapes their actions, judgments, and other teaching strategies bytakingintoconsiderationtheoriesoflearning,understandingsofstudentsandtheirneeds,andthebackgroundsandinterestsofindividualstudents.Itsaimsmay range from furthering liberal education (the general development

ofhumanpotential)tothenarrowerspecificsofvocationaleducation(theimpart ingandacquisitionofspecificskills).

Conventional western pedagogies view the teacher as knowledge holder andstudent as the recipient of knowledge, but theories of pedagogy increasinglyidentifythestudentasanagent andtheteacherasafacilitator.

DefiningPedagogy

- Pedagogy:theprinciples&methodsofinstruction
- Thefunctionorworkofateacher,teaching.
- Pedagogy:Theart,orscienceofbeingteacher,
- Pedagogy:theactivitiesofeducatingorinstructing.
- Preparatorytrainingorinstructions.

ConceptofAdvancePedagogy

- *MeaningofPedagogy:*

  *Pedagogy*and *pedagogue* comefromtheGreek***paidos****"boy,child"* and*agomeans"lead"it*means*'toleadthechild'*

- *Dictionarymeaning*

  1. theartorfunctionofteaching.
  2. theartorscience ofteaching;education;instructionalmethods.

AdvancedPedagogy

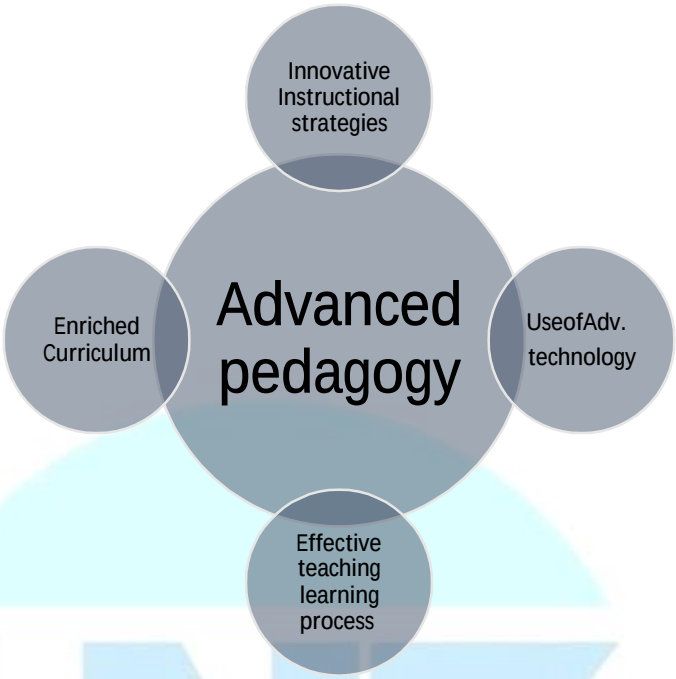
- Advance pedagogy means, a skillful planning of a working system bywhichobjectivecanbeachievedconveniently.
- "Advanced pedagogy means developing & implementing plannedactivities to engage the participants as a partner in the

teachingactivity."

- In other word, the determination of some policy by planning beforepresenting the content.
- Forexample,CAI,Blendedlearning,Flippedclassroometc.

AdvancedPedagogymeansteacherscanintegratedifferentinnovativeteaching strategies,techniques,ICTtools,decisionmakingtoolsetc.intotheirteaching, also design and implement different modes of learning processesthrough alternative delivery systems for courses. There are many teaching-Learning strategies which teachers can use to plan classroom activities inAdvanced Pedagogy.

Advanced Pedagogy is a skillful planning of a working system by whichobjective can be achieved conveniently. Strategies are never the same. Theychange according to the learning situation.The 21st century teacher shouldbefluentintheuseofcommunicationandinformationtechnologies,kno whowto facilitate, stimulate, control, moderate and manage them. They need toforeseethepotentialoftheemergingtechnologies,lookintootherareasofthec urricula and across disciplines, make links that enhance and valuelearning in other fields to leverage thisknowledgeandreinforcetheirteachingand thelearningoftheirstudents.



NeedofAdvancedPedagogy

- Itstrengthensstudentmotivation
- Forpromotingdiscovery/activelearning
- Forbetterunderstanding.
- Forspecialas wellasallkindlearner.
- Forcopingwithfastchanging&volatileenvironment
- Toscientificstudyofteachingprocess.
- Toawareaboutthevariousnewteachingmethods.
- Forselfdirectedlearning

ImportanceofAdvancePedagogy

1. *Effectivepedagogyequips learnersforlifeinitsbroadestsense.*

Learningshouldaimtohelpindividualsandgroupstodeveloptheintellectual,pe

rsonal and social resources that will enable them to participate as activecitizens, contribute to economic development and flourish as individuals in adiverse and changing society. This means adopting a broad conception ofworthwhilelearningoutcomesandtakingseriouslyissuesofequityandsocial justicefor all.

2. *Effectivepedagogyengageswithvaluedformsofknowledge.*

Pedagogyshouldengagelearnerswiththebigideas,keyskillsandprocesses,modesofdiscourse,waysofthinkingandpracticing,attitudesandrelationships, which are the most valued learning processes and outcomes inparticularcontexts.Theyneedtounderstandwhatconstitutesquality,standards andexpertise in differentsettings.

3. *Effective pedagogy recognizes the importance of prior experience andlearning.*

Pedagogy should take account of what the learner knows already in order forthem, and those who support their learning, to plan their next steps. Thisincludesbuildingonpriorlearningbutalsotakingaccountofthepersonalandculturalexperiences ofdifferentgroupsoflearners.

4. *Effectivepedagogyrequireslearningtobescaffold.*

Teachers, trainers and all those, including peers, who support the learning ofothers,shouldprovideactivities,culturesandstructuresofintellectual,social and emotional support to help learners to move forward in their learning.Whenthesesupportsareremovedthelearningneedstobesecure.

5. *Effectivepedagogyneedsassessmenttobecongruentwithlearning.*

Assessment should be designed and implemented with the goal of achievingmaximumvalidity bothintermsoflearningoutcomesandlearningpro

cesses.It should help to advance learning as well as determine whether learning hasoccurred.

6. *Effectivepedagogypromotestheactiveengagementofthelearner.*

A chief goal of learning should be the promotion of learners' independenceand autonomy. This involves acquiring a repertoire of learning strategies andpractices, developing positive learning dispositions, and having the will andconfidenceto become agentsintheirownlearning.

7. *Effective pedagogy fosters both individual and social processes andoutcomes.*

Learnersshouldbeencouragedandhelpedtobuildrelationshipsandcommunication withothersforlearningpurposes,inordertoassistthemutualconstructionofknowledgeandenhancetheachievementsofindividualsandgroups.
Consulting learners about their learning and giving them a voice isbothanexpectationandaright.

8. *Effectivepedagogyrecognizesthesignificanceofinformallearning.*

Informallearning,suchaslearningoutofschoolorawayfromtheworkplace,should be recognized as at least as significant as formal learning and shouldthereforebevaluedandappropriatelyutilizedinformalprocesses.

9. *Effectivepedagogydependsonthelearningofallthosewhosupportthelearningofothers.*

Theneedforlecturers,teachers,trainersandco-workerstolearncontinuouslyin order to develop their knowledge and skill, and adapt and develop theirroles, especially through practice-based inquiry, should be recognized andsupported.

10. *Effectivepedagogydemandsconsistentpolicyframeworkswithsupportforlearningastheirprimaryfocus.*

Organizational and system level policies need to recognize the fundamentalimportance of continual learning - for individual, team, organizational andsystem success - and be designed to create effective learning environmentsforalllearners.

1.0 PrinciplesofAdvancedPedagogy

i. Thelearningenvironmentshouldbesupportive&productive.

a) Buildpositiverelationshipbyknowing&valuingeachstudent.

b) Promoteacultureofvalue&respectforindividual&theircommunities.

c) Usestrategiesthatpromotestudentsselfconfidence&willingnesstotakeris kwiththeir learning.

d) Ensureseachstudentexperiencessuccessthroughstructuredsupport,va luingof effortsoftheirwork.

ii. Thelearningenvironmentpromotesindependence,in terdependence&selfmotivation.

a) Encourages&supportsstudentsto takeresponsibilityfortheirlearning.

b) Usesstrategiesthatbuildskillsofproductivecollaboration.

iii. Students need, background, perspectives & interests are reflectedinthelearningprogram.

a) Usestrategiesthatareflexible&responsivetowardsneeds&interestsofind ividualstudents.

b) Usesarangeofstrategiesthatsupportthedifferentways ofthinking&learning.

c) Buildonstudents'priorexperiences,knowledge&skills.

d) Studentsarechallenged&supportedtodevelopdeeplevelsofthinking&application.

e) Plansequencestopromotesustainedlearning.

f) Promotessubstantivediscussionofideas

g) Usestrategiesthatchallenge&supportstudentstoquestion&reflect

h) Usesstrategiesto developinvestigating&problemsolvingskill.

i) Usesstrategiestofosterimagination&creativity.

iv. Assessmentpracticeareanintegralpartoflearning&teaching

a) usesassessmentpracticesthatencouragereflection&selfassessment.

b) makesassessmentcriteriaexplicit.

c) usesevidencefromassessmenttoinformplanning& teaching.

d) Ensure that student receive frequent constructive feedback that supportsfurtherlearning.

v. Learningconnectsstronglywithcommunities&practicebeyondthecla ssroom.

a) Supportstudentstoengagewithcontemporaryknowledge&practice.

b) plansforstudentstointeractwithlocal&broadercommunities.

c) Usestechnologiesinways thatreflectprofessional&communitypractices.

3.2

STEAM(Science,Technology,Engineering,Arts,Maths)learning:

- ***CONCEPTOFSTEAM***

STEAM Learning is an approach to learning that uses Science, Technology,Engineering, the Arts and Mathematics as access points for guiding studentinquiry,dialogue,andcritical thinking.

STEAM learning results in students who take thoughtful risks, engage inexperiential learning, persist in problem-solving, embrace collaboration, andwork through the creative process. These are the innovators, educators,leaders,andlearnersofthe 21stcentury!

STEAM Learning has made class room education more experiential and heretheemphasisismoreonLEARNINGthanTEACHING.

Do it Yourself is a way where students learn by trial and error method. Herestudentstryusingalternativewaysofsolvingaproblem,overcomingthe road blocks in completing the task using all possible methods, techniques andcreativewaysdevelopoutoftheboxthinkingandproblemsolvingmindsetin youngminds.

STEAM is an educational discipline that aims to spark an interest and lifelongloveoftheartsandsciencesinchildrenfromanearlyage.Science,Techn ology, Engineering, the Arts and Math are similar fields of study in thattheyallinvolvecreativeprocessesandnoneusesjustonemethodforinquirya ndinvestigation.Teachingrelevant,in-demandskillsthatwillpreparestudents to become innovators in an ever-evolving world is paramount, notonlyforthefutureofthestudentsthemselvesbutforthefutureofthecountry.

STEAM empowers teachers to employ project-based learning that

crosseseach of the five disciplines and fosters an inclusive learning environment inwhichallstudentsareabletoengageandcontribute.Asopposedtotraditional modelsofteaching,educatorsusingtheSTEAMframeworkbringthedisciplines together, leveraging the synergy between the modeling processand math and science content, for example, in order to blur the boundariesbetween modeling techniques and scientific/mathematical thinking. Throughthis holistic approach, students are able to exercise both sides of their brainatonce.

STEMVSSTEAM

STEM	STEAM
• SCIENCE	• SCIENCE
• TECHNOLOGY	• TECHNOLOGY
• ENGINEERING	• ENGINEERING
• MATHS	• ARTS
	• MATHS

The addition of the 'A' (The Arts) to the original STEM discipline to createSTEAM is important in part because practices such as modeling, developingexplanations and engaging in critique and evaluation (argumentation), havetoooftenbeenunderemphasizedinthecontextofmathandscienceeducation.

Adding "the Arts" to STEM to create STEAM is about "incorporating creativethinkingandappliedartsinrealsituations,"

"Art is about discovering and creating ingenious ways of problem

solving,integrating principlesorpresentinginformation.

Eg.Pictureanarchitect,theyuseengineering,math,technology,scienceandarts to createstunningbuildingsandstructures."

- ***NeedofSTEAM***

STEAM makes the STEM foundation strong by increasing the critical thinkingskillsofstudentsandhelpingthemrecognizetheconnectionbetweensc ience,technology, engineering, arts, and math. STEAM education provides studentswith meansandtools to discover innovative ways ofsolvingproblems,displayingdata,andintersectingseveral fieldstogether.

It brings five significant fields together, in order to create a comprehensivelearning environment, therefore encouraging the students to participate, co-operate and solve the problem. This in general, inspires students to use theleftandrightsides oftheirbrains,concurrently.

National Education Association provided the four main skill areas importantforsuccess inthe 21st-century workforce:

1. Communication

STEAMeducationisimportantoverall,butifwetalkaboutitsoneofthemostvalu ed features then Communication wouldn't be a wrong choice. STEAMlearning emboldens students to learn communication skills. These skills dealwithemotionalintelligenceandthewayapersoninteractswithanother.

Important between the skills is the aptitude to communicate clearly andthoroughly. In STEAM learning, students are inspired to do various tasks indaily life that create good communication skills. These tasks can

vary
fromhavinggroupprojectsandcollaboratingwithfellowstoresearchpresentati onstoevaluatingarttocommunicatinggradesinpapersetc.

2. *Collaboration*

The crucial part of STEAM education is Collaboration! Why is collaborationimportant? Things we use every day, be it apps or gadgets or vehicles,
aretheresultofteamwork,peoplecooperatingtodothebest!Howthebestteamsa re formed? When every member is permitted to bring to the table his owndistinctive contribution and shine without devaluing other's inputs. STEAMeducationinspirestobringtotheclassroomacollaborativeessenceinst eadofa competitive one. When students are given an opportunity to work togetherin chemistry reactions or ascertain to appreciate their class fellow's artisticwork,theylearntocooperate andappreciatetheirmates.

3. *CriticalThinkingandProblemSolving*

Acquiringinformationisn'tdifficultbutfiguringoutwhatdotowithitis!Whena person is able to think critically, he automatically knows how to apply whathehadlearned.Criticalthinkingleadstoknowinghowtofilterefficiently,al lowing to classify through defining factors of life. This can be throughunpredicted challengesor insteeringsomethingasdefinable.

Be it the future career or personal life, one will have to solve problemseventually.Criticalthinkingisacrucialskillthathasbeenbroughtthro ughtheagesandissignificantaswesteer the 21st century.

4. *Creativity*

The most important skill of the 21st-century is creativity. Other skills

likecommunicationorcooperationcanbespecificallytaughtbutthisdoesn’two rkforcreativity.STEAMeducationdevelopscreativitybycreatingsuchanenvir onmentwhere studentsdiscoverhowto expressthemselves.

Having a supportive and accepting classroom environment leads to studentsgetting a chance to explore their personalities. This leads to students puttingaside preconceptions and thinking differently about a diverse number ofsubjects.

· ***ImportanceofSTEAM***

1. *Encouragesindependentthinking*

- InaSTEAMcurriculum,studentsworkinlearningenvironmentswhich offer minimal risk, and reinforces the idea that making mistakes andfailure can be productive.
- Alongtheway,learnersgoattheirownpaceandskilllevel;theycanspen d time with beginning foundations or challenge themselves byworkingwithcomplexconcepts.
- Students can pursue new tangents of thought, and there is a free-flowingexchangeofideas thatisn’tbound byintellectualconstraints.

2. *Interdisciplinaryapproach*

- A STEAM-centered education is driven by a cross-disciplinary emphasis,exposing learnersto multiple, lateral waysofthinking.
- Subjectssuchasscienceandtecharen’tvaluedmore thanthearts,butallsubjectsarepresentedinrelationshipwith one another.
- It’sonethingtowriteupcodeforefficientsoftware,butittakesstrongartist icskillstomakesure theproducthasauser-friendlyappeal.

- Itteachesstudents thatthey'renotlimitedtooneparticularsubject,ormust pick between a technical or artistic topic; their expertise can beformedthroughacombinationofthese.
- Theequalrepresentationofsubjects promotedbySTEAMmakesitatrulywell-rounded program that appeals to students' evolving curiosity andrangeof interests.

3. *Goal-oriented,project-basedlearning*

- AcentralfeatureofSTEAMprogramsishands-on,project-basedlearning.Learners are working on projects specific to what issues appeal to them.Students decide on a goal and choose which skills to achieve it, allowingthemto exploreandexperimentwithvariousmethods.
- Theadditionofanartisticcomponent makescomplextopics suchasmathandprogrammingmore approachableandlessmentallyintimidating.

4. *Developmentofcreativeproblem-solvingskills*

- While technical knowledge is a requirement in many industries, creativeproblem-solvingremainsoneofthemostsought-afterskillswithinthejobmarket.
- Creativity might seem like a skill that comes instinctually to certainindividuals,butit's actuallyonethatcanbefosteredbyaproperSTEAMeducation.

5. *Engagementwithreal-worldapplications*

- STEAM programs expose students to "big picture" concepts seen in thereal, physical environment. Projects like building a website orconstructing a basic robot enables students to better interact with

real-worldproblemsona smallerscale.

- Thishelpsthemidentifyandrelatetotheirimmediatephysicalandsocialenvironment, such as building software that analyzes statistics ordesigningarchitecturethatcanexistwithina major city.

· ***Benefitsof STEAM***

- It improves the social competences of the students. In STEAM learning,students work in different groups having complicated tasks. In such asituation,everyonetriestovoicetheiropinions,thischallengesstudentstospeakand makeeffortontheirsocial learning.
- Studentslearntheskillswhichcanbeusedinsolvingreal-worldproblemsand aren't only confined to theory. This motivates the students to learnmore as they can practically use the knowledge. If we want to make ourstudents successful, we must need to teach them how they can use theirknowledgeindifferentcircumstances.
- Did we ever wonder why the students of elementary schools are moreengaged than that of high school? The answer is simple – lack ofmotivation. Traditional teaching methods can be boring and lead to forcedlearning.STEAMeducationprovidesafunandexcitingcurriculum,leadingtostudentsfocusingonboth – studiesandtheirtalents.
- STEAM education customizes the learning experience according to everystudent. This focuses on how a student learns and how much does heknow. It provides a platform for the students to speak for themselves andtelltheirintereststotheirfellows.Thischanceofself-advocacysays itall!
- Focusing on computational skills is one of the best things in STEAMlearning.Theseskillscanbeusedtoexamineproblemsandlookpreciselyfor solutions. Different steam products are designed

throughcomputational skills, to prepare students for coding and an enhanced wayofdiagnosisinsolvingproblems.

- STEAM education focuses on developing self-confidence, especially instudents who are antisocial and like to work alone. Through it, thestudentswhoarethequietestmaywanttoleadbybeingconfidentaboutas ubjectmatter theylikethe most.
- It provides cultural competence leading to students interacting withvarious diverse people in a classroom. This means that the studentscommunicatewitheachother,havingculturaldifferences,allowi ngthemto have welcoming and appealing discussions to understand thedifferences.
- Many students lack technology literacy thus leading to humiliation andfailure in the practical world. STEAM education provides students theknowledgeoftechnology,engineering,andprogrammingandinclude sitintoprojects.This trainsthemforthepracticalfuture world!

3.3. The5EModel:StepsandRoleof aTeacher

- **Concept**

The5EModelisbasedontheconstructivisttheorytolearning,whichsug geststhatpeopleconstructknowledgeandmeaningfromexperiences. Byunderstanding and reflecting on activities, students are able to reconcile newknowledge with previous ideas. According to

subject matter expert BeverleeJobrack,"Educationalmovements,suchasinquiry-basedlearning,active learning, experiential learning, discovery learning, and knowledge building,arevariationsofconstructivism."

Intheclassroom,constructivismrequireseducatorstobuildinquiry,exploration,andassessmentintotheirinstructionalapproach.Inmanyways,thismeanstheteacherplaystheroleofafacilitator,guidingstudentsastheylearnnewconcepts.

"The5EModelofInstructionpromotesactivelearning.Studentsareinvolvedin more than listening and reading. They learn to ask questions, observe,model, analyze, explain, draw conclusions, argue from evidence, and talkabout their own understanding. Students work collaboratively with peers toconstructexplanations,solveproblems,andplanandcarryoutinvestigations."–Rodger Bybee

· ***StepsandtheRoleofaTeacher***

1. ENGAGE

The first phase of the 5E Model engages students by having them mentallyfocusonaphenomenon,object,problem,situation,orevent.Theactivitiesinthe Engage phase are designed to help students make connections betweenpastandpresentlearningexperiences,exposepriorconceptions,andorganizethinkingtowardtheessentialquestionsandlearningoutcomesofthelearningsequence.

The role of the teacher in the Engage phase is to present a

situation,
identifytheinstructionaltask,andsettherulesandproceduresfortheacti vities.Theteacheralsostructuresinitialdiscussionstorevealtherangeo fideas,experiences, and language that students use which become resources forupcominglessons.

StudentBehaviors

- Asksquestionssuchas,"Whydidthishappen?""WhatdoIalread yknowaboutthis?""WhatcanIfindoutaboutthis?""Howcanthi sproblembesolved?"
- Showsinterestinthetopicthroughcuriosityandexpressionofwo nderings
- Demonstrates engagement by expressing ideas, sharing observations,andcreatinginitialmodels
- Expressescurrentunderstandingofaconceptoridea

TeachingStrategies(Teacher'sRole)

- Raisesquestionsorposesproblems
- Elicitsresponsesthatuncoverstudents'currentknowledge
- Helpsstudentsmakeconnectionstopreviouswork
- Postslearningoutcomesandexplicitlyreferencesthemin thelesson
- Invitesstudentsto expresswhattheythink
- Invitesstudentstoraisetheirownquestions

2. EXPLORE

Once students have engaged in activities, they need time to explore
ideas.Exploreactivitiesaredesignedsoallstudentshavecommon,conc reteexperienceswhichcanbeusedlaterwhenformallyintroducingand

discussingscientificandtechnologicalconceptsandexplanations.Stu dentshavetimetoinvestigate objects, events, or situations. As a result of their mental andphysical involvement in these activities, students question events, observepatterns,identifyandtestvariables,andestablishcausal relationships.

The teacher's role in the Explore phase is to facilitate learning. They

initiateactivitiesandallowtimeandopportunityforstudentstoinvestig ateobjects,

materials, and situations. The teacher coaches and guides students as theyrecord and analyze observations or data and begin constructing models orinitialexplanations.

StudentBehaviors

- Tests predictions and hypotheses; Formsnew predictionsandhypotheses
  - Discussesproblemswithothers
  - Plansandconductsinvestigationsinwhichtheyobserve,describ e,andrecorddata
  - Triesdifferentwaystosolveaproblemoransweraquestion
  - Createsinitialmodels
  - Comparesideaswiththoseofothers

TeachingStrategies(Teacher'sRole)

- Providesorclarifiesquestionsorproblems
- Providescommonexperiences
- Observesandlistenstostudentsastheyinteract
- Actsasaconsultantforstudents
- Encouragesstudent-to-studentinteraction

- Asksprobingquestionstohelpstudentsmakesenseoftheirexperiencesandredirectthemwhennecessary
- Providestimeforstudentstopuzzlethroughproblems

3. EXPLAIN

The Explain phase consists of two parts. First, the teacher asks students toshare their initial models and explanations from experiences in the Engageand Explore phases. Second, the teacher provides resources and informationtosupportstudentlearningandintroducesscientificortechnologicalconcepts.

Students use these resources and information, as well as ideas of otherstudents,toconstructorrevisetheirevidence-basedmodelsandexplanations.Inengineering,studentsdesignsolutionstoproblemsbasedonestablishedcriteria.

StudentBehaviors

- Showsmodels,explanations,answers,orpossiblesolutions,tootherstudents
- Listenscriticallytoandquestionsexplanationsofferedbyothers
- Explainsusingevidencefrominvestigations
- Useslabels,terminology,andformalscientificlanguage
- Comparescurrentthinkingwithformerthinking
- Recordsideasandcurrentunderstanding
- Adjustsideas,models,andexplanationsasnewevidenceorreasoningispresented

TeachingStrategies(Teacher'sRole)

- Encouragesstudentstoexplainconceptsanddefinitionsintheir

ownwords

- Asksforjustification(evidence)andclarificationfromstudents
- Formallyprovidesdefinitions,explanations,andinformationth roughmini-lecture,text,internet,or other resources
- Buildsonstudentexplanations
- Providestimeforstudentstocomparetheirideaswithothersandi fdesiredrevise theirideas.

4. ELABORATE

Once students have constructed explanations of a phenomenon or designsolutionsforaproblem,itisimportanttoinvolvetheminfurthere xperiencesthat apply, extend, or elaborate the concepts, processes, or skills they arelearning. Some students may still have misconceptions, or they may onlyunderstand a concept in terms of the exploratoryexperience. Elaborateactivities provide time for students to apply their understanding of conceptsand skills. They might apply their understanding to similar phenomena orproblems.

StudentBehaviors

- Appliesnewlabels,definitions,explanations,andskillsinnew,b utsimilar,situations
- Usespreviousinformationtoaskquestions,proposesolutions, makedecisions, designexperiments,orcomplete achallenge
- Drawsreasonableconclusionsfromevidence
- Critiquesthemodels,explanations,orargumentsmadebyothers usingevidenceandreasoning
- Makesconceptualconnectionsbetweennewandpreviousexperiences
- Communicatesunderstandingtoothers

TeachingStrategies(Teacher'sRole)

- Expectsstudentstousevocabulary,definitions,andexplanation sprovidedpreviouslyinnewcontexts
- Encouragesstudentstoapplytheconceptsandskillsinnewsituations
- Providesadditionalevidence,explanations,orreasoning
- Reinforcesstudents'useofscientifictermsanddescriptionspre viouslyintroduced
- Asksquestionsthathelpstudentsdrawreasonableconclusionsfr omevidenceanddata

5. EVALUATE

Itisimportantthatstudentsreceivefeedbackonthequalityoftheirexpla nations.Informally,thismayhappenthroughoutthelearningsequence. Formally, the teacher can also administer a summative evaluation at the endof the learning sequence. The Evaluate phase encourages students to assesstheir understanding and abilities and allows teachers to evaluate individualstudent progresstowardachievinglearninggoalsandoutcomes.

StudentBehaviors

- Givesfeedbacktootherstudents
- Evaluatesprogressorknowledge
- Checksworkwitharubricoragainstestablishedcriteria
- Assessesprogressbycomparingcurrentunderstandingwithpri orknowledge
- Asksadditionalquestionsthatgodeeperintoaconceptorleadsto additional learning
- DemonstratesunderstandingofDisciplinaryCoreIdeas,Crossc uttingConcepts,andScienceandEngineeringPractices

- Answersopen-endedquestionsbyusingobservations,evidence,andpreviouslyacceptedexplanations

TeachingStrategies(Teacher'sRole)

- Asksopen-endedquestionssuchas,"Whydoyouthink…?""Whatevidencedoyouhave?" "Howwouldyouanswerthequestion?"
- Observes and records notes as students demonstrate individual understanding ofconceptslearnedand performance ofskills
- Uses a variety of assessments to gather evidence of student understanding Providesopportunitiesforstudentstoassesstheirownprogress

3.4. Reflective Learning: Concept, Gibb's Cycle and Role of TeacherConcept

Reflectivelearningisaformofeducationinwhichthestudentreflectsupontheir learning experiences. An important aspect of the learning process is forstudents to step away and reflect on their experience. Reflective learningfocusesonthedevelopmentofcritical-thinkingskillsthroughtheinternal process of examining strengths and exploring areas for improvement. Thelearner constructs and clarifies meaning in terms of their own understandingand cognition, supporting changes in conceptual perspective. The positiveimpact of reflective learning has been well documented, stemming from theworks of Dewey (1938) and Schon (1983) where the process of reflectionchallengesmisconceptionsandprovidesclarity.

Reflective learning involves actively monitoring and assessing a

student’sknowledge,abilities,andperformanceduringthelearningpr ocess,inordertoimprovethe process anditsassociatedoutcomes.

For example, if a student is studying for a test, he can engage in reflectivelearningbyaskinghimselfhowwellheunderstandseachofth etopicsthatheisstudying,andbasedonthisfigureoutwhichtopicsyoun eedtospendmoretimeon.

Reflective learning can be beneficial in various ways and in various contexts,so it’s often worthwhile to engage in it. As such, in the following article youwill learn more about reflective learning, and see how you can engage in ityourself,aswellashowyoucanencourageothers to engageinit.

Inaprofessionalcontext,thisisknownas reflectivepractice,whereinth euseofthereflectiveprocessallowsonetounderstandexperiencesdiffe rentlyandtakeactionaccordingly.

AdvantagesofReflectiveLearning

Therearesevaraladvantagesofreflectivelearningforthestudent,which include:

- Acceptingresponsibilityforyourlearningand,asaresult,f oryourpersonalgrowth
- Becoming **metacognitive**, or aware of your internal thinkingprocesses
- Becomingawareofyourmotiveswithyouractions
- Seeing a link between the work you are putting into learning and whatyouaregettingout ofit.

Gibbs'ReflectiveCycle

Gibbs' Reflective Cycle was developed by Graham Gibbs in 1988 to givestructure to learning from experiences.It offers a

framework for examiningexperiences, and given its cyclic nature lends itself particularly well torepeatedexperiences,allowingyoutolearnandplanfromthingsthatei therwentwellor didn't go well.Itcovers6 stages:

- **Description**oftheexperience
- **Feelings**andthoughtsabouttheexperience
- **Evaluation** oftheexperience,bothgoodand bad
- **Analysis**to makesenseofthesituation
- **Conclusion**aboutwhatyoulearnedandwhatyoucouldhave donedifferently
- **Actionplan** forhowyouwoulddealwithsimilarsituationsinthefuture ,or generalchangesyoumightfindappropriate.

Belowisfurtherinformationon:

- Themodel– eachstageisgivenafullerdescription,guidingquestionstoasky ourselfand anexampleofhow thismightlookinareflection
- Differentdepths ofreflection– anexampleofreflectingmorebrieflyusing thismodel

This is just one model of reflection. Test it out and see how it works for you.If you find that only a few of the questions are helpful for you, focus onthose.However,bythinkingabouteachstageyouaremorelikelytoen gagecriticallywithyour learningexperience.

Acirculardiagramshowingthe6stagesofGibbs'Reflective cycle

Gibbs'reflectivecycle

Gibbs originally advocated its use in repeated situations, but the stages andprinciples apply equally well for single experiences too. If done with a stand-alone experience, the action plan may become more general and look at howyoucanapply your conclusionsinthe future.

Foreachofthestagesofthemodelanumberofhelpfulquestionsareoutlinedbelow. One doesn't have to answer all of them but they can guide one aboutwhatsortofthingsmakesensetoincludeinthatstage.Onemighthaveotherpromptsthatworkbetter forhim.

Description

Here One has a chance to describe the situation in detail. The main points toincludehereconcernwhathappened.One'sfeelingsandconclusions

willcomelater.

Helpfulquestions:

- Whathappened?
- Whenandwheredidithappen?
- Whowaspresent?
- Whatdidyouand theotherpeopledo?
- Whatwastheoutcomeofthesituation?
- Whywereyouthere?
- Whatdidyouwanttohappen?

Feelings

Here you can explore any feelings or thoughts that you had during theexperienceandhowtheymay have impactedthe experience.

Helpfulquestions:

- Whatwereyoufeelingduringthesituation?
- Whatwereyoufeelingbeforeandafter thesituation?
- Whatdoyouthinkotherpeoplewerefeelingaboutthesituation?
- Whatdoyouthinkotherpeoplefeelaboutthesituationnow?
- Whatwereyouthinkingduringthesituation?
- Whatdoyouthinkaboutthesituationnow?

Evaluation

Hereyouhaveachancetoevaluatewhatworkedandwhatdidn’tworkint hesituation. Try to be as objective and honest as possible. To get the most outof your reflection focus on both the positive and the negative aspects of thesituation,evenifitwasprimarilyoneor the

other.

Helpfulquestions:

- Whatwasgoodand badabouttheexperience?
- Whatwentwell?
- Whatdidn’tgosowell?
- Whatdidyouandotherpeoplecontributetothesituation(positivelyornegatively)?

Analysis

The analysis step is where you have a chance to make sense of whathappened. Up until now you have focused on details around what happenedinthesituation.Nowyouhaveachancetoextractmeaningfromit.Youwantto target the different aspects that went well or poorly and ask yourself why.If you are looking to include academic literature, this is the natural place toincludeit.

- Whydidthingsgo well?
- Whydidn’titgowell?
- WhatsensecanI makeofthesituation?
- Whatknowledge– myownorothers(forexampleacademicliterature)canhelp me understand the situation?

Conclusions

Inthissectionyoucanmakeconclusionsaboutwhathappened.Thisiswhereyousummarizeyourlearningandhighlightwhatchangestoyouractionscould improve the outcome in the future. It should be a natural response to thepreviussections.

Helpfulquestions:

- WhatdidIlearnfromthissituation?
- Howcouldthishavebeenamorepositivesituationforev eryoneinvolved?
- WhatskillsdoIneedtodevelopformetohandleasituationliket hisbetter?
- WhatelsecouldIhavedone?

Actionplan

At this step you plan for what you would do differently in a similar or relatedsituationinthefuture.Itcanalsobeextremelyhelpfultothinkabo uthowyouwill help yourself to act differently – such that you don't only plan what youwill do differently, but also how you will make sure it happens. Sometimesjusttherealization isenough,butothertimesremindersmightbehelpful.

Helpfulquestions:

- IfIhadtodothesamethingagain,whatwouldIdodifferently?
- HowwillIdeveloptherequiredskillsI need?
- HowcanImakesurethatIcanactdifferentlynexttime?

APracticalExamplefollowingGibb'sCycle

Step1–Description

Mygroupoffriendshadstartedtoteachonetopicofsyllabustoeachotherandit wasmy turn toteachand share itsmaterials.

Step2–Feelings

Whilethinkingofthescenario,IfeltquitenervousasIhadnotreadthattopic

before and was not confident I could prepare the materials andteach it effectively. However, on the day of my turn I was excited andfelt more positive. My friends supported my teaching process withpositive body language which helped me to relax and enjoy the wholeprocess although I did worry afterwards that the material prepared bymewasnotupto the mark.

Step3–Evaluation

On the plus side, all the friends were quite contented with my effortsandtheyunderstoodthe topictaughtbyme fully.On

the negative side, the material was not precisely prepared so I had toaddonfew pageslater

Step4–Analysis

OnreflectionIrealisedthatIshouldhaveresearchedmoreonmaterialdevelopment.Onbalancethough,thelecturewaseffectivewithhealthyinteraction among participants. Speaking to some of my friends afterthelecture,theirpositive

feedback helped me realise that my outgoing personality allowed myfriendstofeelat ease andaskquestionsfreelyduring lecture.

Step5–Conclusion

Igrewinconfidenceasaresultofthisexperienceandrealisedthatitisokto make mistakes.

Step6–ActonPlan

ThenexttimeIteachatopic,Icouldhaveresearchedmoreonthepartof material side. I could also seek advice from my faculties too who arehabituatedofteachingthetopics.Thiswillhelpmefeelbetterorganisedand confident.

4.1.Blended Learning : Concept ,Forms , Role Of Teacher

Blended learning is an educational approach that combines traditional face-to-face instruction with online learning activities and resources. It integrates the best aspects of both traditional classroom teaching and online learning to create a more flexible and personalized learning experience. Here's an overview of the concept:

1. **Integration of Online and In-Person Learning**: Blended learning aims to leverage the advantages of both online and in-person learning modalities. In a blended learning environment, students engage in a combination of traditional classroom activities, such as lectures, discussions, and hands-on exercises, as well as online activities, such as interactive modules, multimedia content, and collaborative projects.

2. **Flexibility and Personalization**: Blended learning provides flexibility for students to access learning materials and participate in activities at their own pace and convenience. It allows for personalized learning experiences tailored to individual student needs, preferences, and learning styles. Students can review content, complete assignments, and engage in additional learning activities online outside of scheduled class time, providing opportunities for self-directed learning and exploration.

3. **Differentiated Instruction**: Blended learning enables teachers to differentiate instruction to meet the diverse needs of students. Teachers can use online assessments and analytics to gather data on student performance and adjust instruction accordingly. They can provide targeted support, interventions, or extensions based on individual student progress and learning goals.

4. **Increased Engagement and Interaction**: Blended learning promotes active engagement and interaction among students and between students and teachers. Online learning platforms and tools offer opportunities for collaborative learning, peer interaction, and feedback exchange through discussion forums, group projects, and virtual classrooms. In-person class sessions can focus on interactive activities, discussions, and hands-on experiences that deepen understanding and reinforce learning.

5. **Access to Resources and Support**: Blended learning expands access to a wide range of educational resources and support services. Students can access multimedia content, educational websites, digital textbooks, and online tutorials to supplement classroom instruction and enhance their learning experience. Additionally, online communication tools enable students to connect with teachers, peers, and experts for support, feedback, and collaboration.

6. **Technology Integration**: Blended learning relies on technology as a key enabler of the learning process. Educational technology tools and platforms, such as learning management systems (LMS), video conferencing software, interactive simulations, and online assessment tools, play a central role in delivering and managing blended learning experiences.

Overall, blended learning offers a flexible, dynamic, and student-centered approach to education that harnesses the power of technology to enhance teaching and learning outcomes. By combining the strengths of traditional and online learning modalities, blended learning provides opportunities for innovation, customization, and improved learning effectiveness in diverse educational contexts.

- **Blended learningForms:-**

Blended learning can take various forms, depending on how the online and in-person components are combined and structured. Here are some common forms of blended learning:

1. **Rotation Model**: In the rotation model, students rotate between different learning modalities, including face-to-face instruction and online learning activities. This model can be structured in different ways:

- **Station Rotation**: Students move between different stations within the classroom, each offering a different learning activity, such as teacher-led instruction, independent practice, group work, or online learning.
- **Lab Rotation**: Students spend a portion of their time in a computer lab or designated technology-equipped space, where they engage in online learning activities or use digital resources under the supervision of the teacher.

2. **Flex Model**: The flex model gives students more control over their learning pace, path, and place. Students have access to online learning resources and activities, which they can engage with independently outside of scheduled class time. Teachers provide guidance, support, and personalized instruction as needed, but students have flexibility in how they manage their learning.

3. **Flipped Classroom**: In the flipped classroom model, instructional content is delivered online outside of class time, typically in the form of videos, readings, or interactive modules. Class time is then used for active learning activities, such as discussions, collaborative projects, problem-solving, or hands-on exercises, where students apply and deepen their understanding of the material.

4. **Enriched Virtual Model**: In the enriched virtual model, the majority of learning occurs online, with occasional face-to-face meetings or sessions for specific purposes, such as project-based learning, labs, workshops, or assessments. Students engage with online learning activities, resources, and assignments at their own pace and receive support and guidance from teachers as needed.

5. **Hybrid Model**: The hybrid model combines elements of traditional face-to-face instruction with online learning components, but the specific structure and implementation can vary. This model allows for flexibility in how the online and in-person components are integrated, depending on the needs and preferences of students and teachers.

6. **Integrated Model**: In the integrated model, online and in-person learning activities are seamlessly integrated to create a cohesive and interactive learning experience. Teachers design learning experiences that leverage the strengths of both modalities to achieve specific learning objectives and engage students in meaningful ways.

Each form of blended learning has its advantages and challenges, and the most appropriate model depends on factors such as the learning goals, content area, student needs, available resources, and technological infrastructure. By carefully designing and implementing blended learning experiences, educators can create engaging, personalized, and effective learning environments that meet the diverse needs of students.

- **Role of Teacher**:-

In a blended learning environment, the role of the teacher evolves to encompass various responsibilities that support and facilitate student learning both in-person and online. Here are some key roles that teachers play in blended learning:

1. **Curriculum Design and Instruction**: Teachers design and organize the curriculum to integrate online and in-person learning activities effectively. They select or create instructional materials, resources, and assessments that align with learning objectives and cater to diverse student needs and learning styles.

2. **Facilitation and Guidance**: Teachers serve as facilitators and guides who support students' learning progress both in the classroom and online. They provide instruction, explanations, demonstrations, and feedback to help students understand concepts, solve problems, and complete assignments. Teachers also offer guidance on how to navigate online platforms, access resources, and engage with digital content effectively.

3. **Personalized Learning Support**: Teachers differentiate instruction to meet the individual needs, interests, and abilities of students. They identify students' strengths and areas for growth through assessment data and provide personalized support, interventions, and enrichment activities as needed. Teachers may offer one-on-one tutoring, small group instruction, or adaptive learning pathways tailored to each student's learning profile.

4. **Tech Integration and Support**: Teachers integrate educational technology tools and platforms into instruction to enhance learning experiences and outcomes. They familiarize themselves and their students with digital tools, software, and online resources, providing training, troubleshooting, and technical support as needed. Teachers leverage technology to deliver content, facilitate collaboration, and assess student progress effectively.

5. **Monitoring and Assessment**: Teachers monitor students' progress and engagement in both online and in-person learning activities. They use formative assessment strategies to gauge understanding, identify misconceptions, and adjust instruction accordingly. Teachers analyze data from online platforms and

assessments to track student performance, provide timely feedback, and inform instructional decisions.

6. **Facilitation of Collaboration and Communication**: Teachers foster a collaborative and interactive learning environment where students can engage with peers, share ideas, and collaborate on projects. They facilitate online discussions, group work, and collaborative activities that promote critical thinking, communication skills, and teamwork. Teachers also encourage communication between students and provide opportunities for peer feedback and support.

7. **Reflection and Continuous Improvement**: Teachers reflect on their teaching practices, student outcomes, and the effectiveness of blended learning experiences. They seek feedback from students, colleagues, and administrators to evaluate and refine their instructional strategies, curriculum design, and use of technology. Teachers engage in professional development activities to stay current with best practices in blended learning and enhance their teaching skills.

Overall, in a blended learning environment, teachers play a pivotal role in orchestrating meaningful learning experiences, supporting student growth and success, and fostering a culture of collaboration, inquiry, and continuous improvement.

4.3. Modern Techniques Of Assessment : Concept And Introduction

1. Quiz(google form):-

Creating a quiz using Google Forms is a straightforward process. Here's a step-by-step guide to help you get started:

1. **Access Google Forms**: Go to Google Forms by visiting the website (https://www.google.com/forms) or opening the Google Forms app from your Google Drive.

2. **Sign in**: Sign in to your Google account if you're not already signed in. This will allow you to create and save your quiz on Google Drive.

3. **Start a New Form**: Click on the "+ Blank" or "Blank form" option to start a new form.

4. **Add Questions**: Click on the "+ Add question" button to add a new question to your quiz. You can choose from various question types, including multiple-choice, short answer, paragraph, and more.

5. **Enter Question Details**: Enter the question text and any additional instructions or details for the question. For multiple-choice questions, you can add answer options by clicking on "Option 1," "Option 2," etc.

6. **Customize Question Settings**: You can customize the settings for each question by clicking on the three dots in the bottom-right corner of the question box. Options may include making the question required, adding answer feedback, or shuffling answer options.

7. **Add More Questions**: Continue adding questions to your quiz by clicking on "+ Add question" and repeating steps 5 and 6.

8. **Organize Sections (Optional)**: If your quiz has multiple sections, you can organize them by clicking on the "Add section" button. This allows you to group related questions together and add section titles or descriptions.

9. **Preview Your Quiz**: Click on the eye icon at the top-right corner to preview your quiz and see how it will appear to respondents.

10. **Customize Quiz Settings**: Click on the settings (gear) icon at the top-right corner to customize the settings for your quiz. Options may include limiting responses, collecting email addresses, and allowing respondents to edit their responses after submission.

11. **Share Your Quiz**: Once your quiz is ready, you can share it with others by clicking on the "Send" button at the top-right corner. You can choose to share the link directly, send it via email, or embed it on a website.

12. **View Responses**: As respondents complete your quiz, you can view their responses in real-time by clicking on the "Responses" tab. You can also choose to view responses in Google Sheets for more detailed analysis.

2. Games (Kahoot)

Creating a game using Kahoot is a fun and engaging way to assess learning or host interactive quizzes, surveys, or discussions. Here's a step-by-step guide to help you create a game on Kahoot:

1. **Sign In or Sign Up**: Go to the Kahoot website (https://kahoot.com) and sign in to your Kahoot account. If you don't have an account, you can sign up for free.

2. **Create a New Kahoot**: Once you're signed in, click on the "Create" button at the top of the screen to start creating a new Kahoot game.

3. **Choose Game Type**: Select the type of game you want to create: Quiz, Survey, Discussion, or Jumble. Choose "Quiz" if you want to create a game with multiple-choice questions.

4. **Enter Details**: Enter the title and description for your Kahoot game. You can also choose to add a cover image to make your game more visually appealing.

5. **Add Questions**: Click on the "Add question" button to start adding questions to your Kahoot game. You can add multiple-choice questions with up to four answer options for each question.

6. **Enter Question Details**: Enter the question text and select the correct answer from the available options. You can also add images or videos to enhance your questions.

7. **Set Time Limit**: Optionally, you can set a time limit for each question by adjusting the timer slider. This adds an element of challenge and urgency to the game.

8. **Customize Settings**: Click on the "Settings" button to customize the settings for your Kahoot game. You can choose options such as enabling player identifiers, turning on or off the question timer, and allowing students to join the game at their own pace.

9. **Preview Your Kahoot**: Before launching your Kahoot game, click on the "Preview" button to see how it will appear to players. This allows you to check for any errors or make adjustments as needed.

10. **Save and Launch**: Once you're satisfied with your Kahoot game, click on the "Save" button to save your changes. Then, click on the "Play" button to launch your Kahoot game and start playing with your audience.

11. **Share Game PIN**: Kahoot will generate a unique game PIN that players can use to join your game. Share this PIN with your audience so they can join the game using their devices.

12. **Play Kahoot**: Start the game by clicking on the "Start" button. Players can join the game using the game PIN, and they'll see the questions on their devices. Players earn points for correct answers and compete for the top spot on the leaderboard.

That's it! You've created a Kahoot game. Enjoy playing and engaging with your audience in a fun and interactive way.

3.Student Response System (Mentimeter)

Mentimeter is a versatile student response system that allows educators to create interactive presentations, quizzes, polls, and surveys to engage students and gather real-time feedback. Here's a step-by-step guide to using Mentimeter:

1. **Sign In or Sign Up**: Go to the Mentimeter website (https://www.mentimeter.com) and sign in to your Mentimeter account. If you don't have an account, you can sign up for free.

2. **Create a New Presentation**: Once you're signed in, click on the "Create new presentation" button to start creating a new Mentimeter presentation.

3. **Choose Slide Type**: Select the type of slide you want to create: Multiple Choice, Word Cloud, Quiz, Open-ended, Rating, or any other available slide type.

4. **Enter Slide Content**: Enter the question or prompt for your slide, as well as any additional instructions or details. For multiple-choice slides, you can add answer options. For other slide types, such as Word Cloud or Open-ended, students can respond with text.

5. **Customize Settings**: Customize the settings for your slide, such as the duration of the slide, whether responses are anonymous or visible, and whether participants can submit multiple responses.

6. **Add More Slides**: Continue adding slides to your Mentimeter presentation by clicking on the "Add slide" button and repeating steps 3-5.

7. **Preview Your Presentation**: Before presenting your Mentimeter presentation to your students, click on the "Present" button to preview how it will appear to participants. This allows you to check for any errors or make adjustments as needed.

8. **Present Your Mentimeter**: Start presenting your Mentimeter presentation to your students by clicking on the "Present" button. Participants can join your presentation using the provided code or link.

9. **View Responses**: As participants respond to your Mentimeter presentation, you can view their responses in real-time. Mentimeter provides visualizations and summaries of participant responses, such as charts, graphs, and word clouds, which you can display to the class.

10. **Engage and Interact**: Use Mentimeter to engage and interact with your students during presentations, lectures, discussions, or workshops. Encourage active participation by asking questions, polling opinions, or soliciting feedback throughout your presentation.

11. **Save Results**: After your Mentimeter session, you can save the results and responses for later review and analysis. You can also export the data to share with colleagues or integrate it into your teaching materials.

That's it! You've created and used a Mentimeter presentation to engage students and gather feedback in real-time. Mentimeter is a powerful tool for promoting active learning, student engagement, and collaboration in the classroom.

4. Peer Review

Peer review is a process used in academia and research to evaluate the quality, validity, and significance of scholarly work before it is published or presented. It involves having experts in the same field (peers) critically assess the work to ensure its accuracy, rigor, and contribution to the body of knowledge. Here's an overview of the peer review process:

1. **Submission**: The process begins when an author submits their manuscript, research paper, or academic work to a scholarly journal, conference, or other publication venue for consideration.

2. **Editorial Screening**: Upon receiving the submission, the editor of the publication venue conducts an initial screening to assess whether the submission meets the basic requirements for consideration, such as relevance to the journal's scope, adherence to formatting guidelines, and compliance with ethical standards.

3. **Assignment to Reviewers**: If the submission passes the editorial screening, the editor assigns the manuscript to one or more external reviewers, who are experts in the same field as the author. Reviewers are typically selected based on their expertise, reputation, and impartiality.

4. **Peer Review**: The reviewers carefully evaluate the submission to assess its quality, originality, methodology, clarity, and significance. They provide constructive feedback, critique, and recommendations for improvement to the author and the editor. Peer review may involve double-blind, single-blind, or open review processes, depending on the publication venue's policies.

5. **Editorial Decision**: Based on the feedback from the reviewers, the editor makes an editorial decision on whether to accept the submission for publication, request revisions from the author, or reject the submission outright. The decision may take into account the reviewers' comments, the author's responses

to the feedback, and the overall fit with the publication venue's objectives and standards.

6. **Revision and Resubmission**: If revisions are requested, the author revises the manuscript in response to the reviewers' feedback and submits a revised version to the editor. The revised manuscript may undergo further rounds of peer review until it meets the publication venue's standards for acceptance.

7. **Publication or Presentation**: Once the manuscript has been accepted, it is published in a scholarly journal, presented at a conference, or otherwise disseminated to the academic community. Peer-reviewed publications are considered credible and reliable sources of scholarly information and are often cited by other researchers in the field.

Peer review serves several important purposes in academia and research:

- **Quality Assurance**: Peer review helps ensure the integrity, accuracy, and reliability of scholarly work by subjecting it to rigorous scrutiny by experts in the field.
- **Feedback and Improvement**: Peer review provides authors with valuable feedback and suggestions for improving their work, leading to higher-quality research outcomes.
- **Knowledge Dissemination**: Peer-reviewed publications facilitate the dissemination of new knowledge and discoveries to the academic community and the broader public.
- **Academic Recognition**: Publication in peer-reviewed journals is a key criterion for academic recognition, career advancement, and funding opportunities for researchers.

Overall, peer review plays a crucial role in maintaining the standards of scholarship, fostering academic discourse, and advancing the frontiers of knowledge in various disciplines.

4.3. Digital Portfolio:Concept,TypeAdvantages ,Limitation

1.0Concept

A student portfolio is compilation of academic work and other forms ofeducational evidence assembled for purpose. OR A portfolio is a collection ofrecordsthatreflectsyouraccomplishments,skillsandexperiences.Aportfoliois not the pile of student work that accumulates over a semester or year.Rather, a portfolio contains a purposefully selected subset of student work.“Purposefully” selecting student work means deciding what type of story youwantthe portfolio to tell.

A student portfolio is a systematic collection of student work and relatedmaterialthatdepictsastudent’sactivities,accomplishments,andachievements in one or more school subjects. The collection should includeevidenceofstudentreflectionandself-evaluation,guidelinesforselectingtheportfoliocontents,andcriteriaforjudgingtheq ualityofthework.Thegoalisto help students assemble portfolios that illustrate their talents, representtheirwritingcapabilities,andtelltheirstoriesofschoolachievement.

Identifying specific goals or purposes for assigning a portfolio is the first andmost critical step in creating an assignment. Just as identifying a standardguidestherestofthestepsofdevelopinganauthenticassessment,identifyin ghe purpose(s) for a portfolio influences all the other decisions involved inproducing aportfolio assignment

2.0PurposeofPortfolio

The first and most significant acts of portfolio preparation are to determinethepurposesfortheportfolio.Thepurposeoftheportfoliodirectlyaffectst heprocess by which the portfolio is created. Also, the purposes of portfoliodeterminewhatkindsofitemsshouldbeinit.

Portfolioscanbeusedfordifferentpurposesineducation.Thepurposeoftheportfolio canbeshapeddependingontheusers'demands.Theaimofteacherusing portfolio is to assess the progress of the student over a period of time,to determine the efficiency of the teaching, to have connection with theparentsofthestudents,toevaluatetheeducationprogram,toenableschoolstohave contactwiththecommodity,tohelpstudentsforself-assessmentandto determine the students' weak points in learning process. Instructors canusethemfor a varietyofspecificpurposes,including :

- Encouragingself-directedlearning.
- Enlargingtheviewofwhatis learned.
- Fosteringlearningaboutlearning.
- Demonstratingprogresstowardidentifiedoutcomes.
- Creatinganintersectionforinstructionandassessment.
- Providingawayforstudentstovaluethemselvesaslearners.
- Offeringopportunitiesforpeer-supportedgrowth.

3.0TypesofPortfolioAssessment

Process and product/showcase portfolios represent the two major types ofportfolios.Thesedaysthemost populartypeofportfoliois anE-portfolio.

Aprocessportfoliodocumentsthestagesoflearningandprovidesaprogressiverec ordofstudent'sgrowth.Teachersuseprocessportfoliostohelpstudentsidentifylearn inggoals,documentprogressovertime,anddemonstrate learning mastery. Teachers prefer to use process portfoliosbecause they are ideal for documenting the stages that students go throughas they learn and progress. A process portfolio is not always a collection of astudent'sbestwork;itcanincludeavarietyoflearningattemptsorunpolisheddocum

entationalongwith reflectionson strugglesandchallenges.

A product/showcase portfolio demonstrates mastery of a learning task ora set of earning objectives and contains only the best work. Product orientedportfolios are collections of work a student considers his or her best. The aimistodocumentandreflectonthequalityandrangeofaccomplishmentsratherthantheprocessthatproducedthem.Itgenerallyrequiresastudenttocollectall of her work until the end, at which time she must choose artifacts thatrepresentworkofthe highest quality.

Electronic portfolio have been made possible by technological advances.Since current technology allows for the capture and storage of information inthe form of text, graphics, sound, and video, students can save writingsamples, solutions to mathematics problems, samples of art work, scienceprojects and multimedia presentations in one coherent document. Electronicportfolios offer many advantages such as to collect, and store, and managetheinformationelectronicallyaccordingtotraditionalportfolios.Inrecent years,becauseoftheeducationalopportunitiessupportedwiththetechnologicaldevelopment,electronicportfoliosare usedmuchmore.

4.0 DevelopmentofAPortfolio

First, the teacherand the student need to clearly identify the portfoliocontents,whicharesamplesofstudentwork,reflections,teacherobservations,andconference records.

Second, the teacher should develop evaluation procedures for keeping trackofthe portfoliocontentsand for gradingthe portfolio.

Third the teacher needs a plan for holding portfolio conferences, which

areformalandinformalmeetingsinwhichstudentsreviewtheirworkanddiscusstheir progress.Becausetheyencouragereflectiveteachingandlearning,theseconference areanessential partoftheportfolio assessmentprocess.

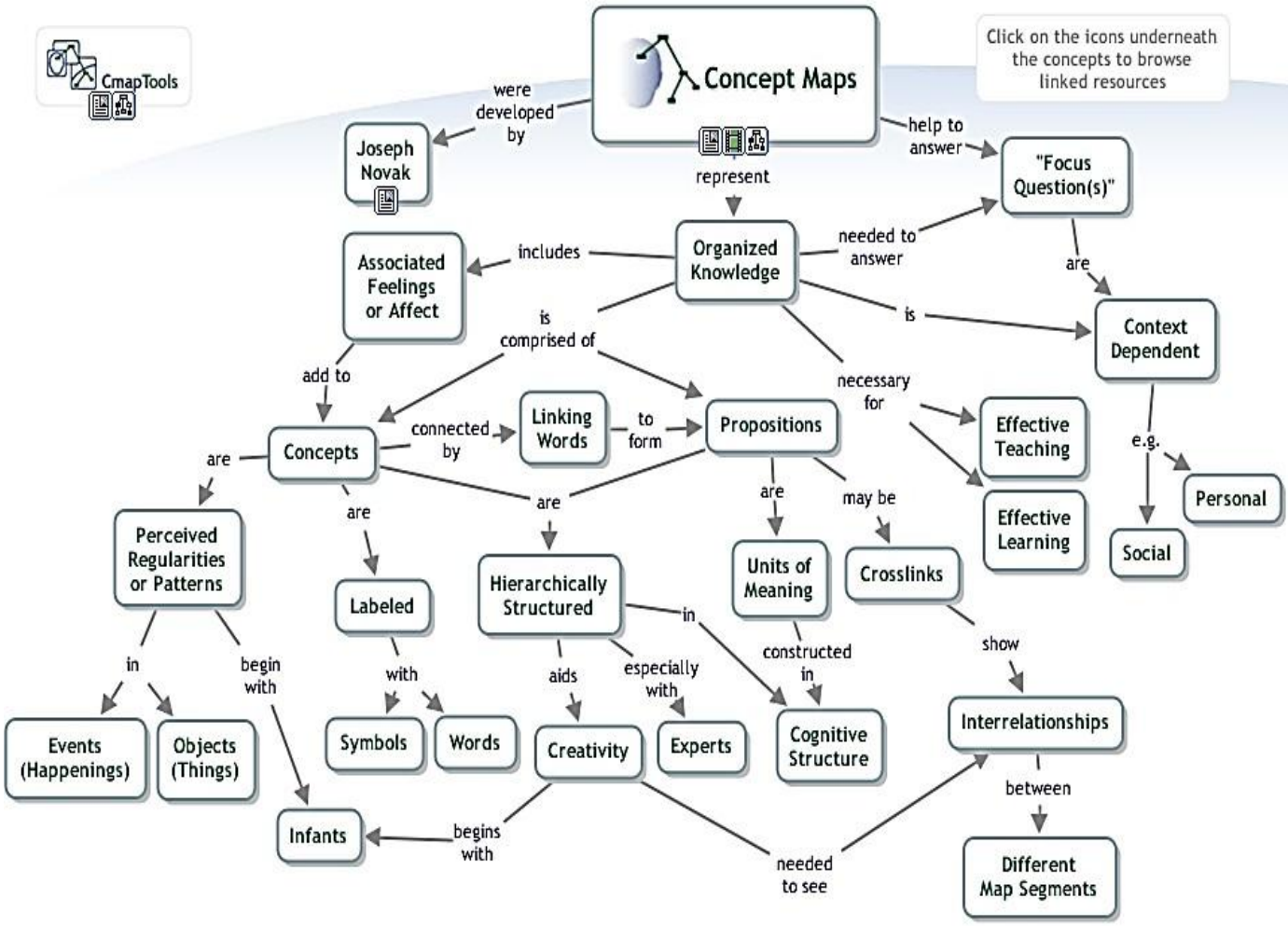
- Determine the purpose of the portfolio. Decide how the results of aportfolioevaluationwillbeusedtoinformtheprogram.
- Identifythelearningoutcomestheportfoliowilladdress.
- Decidewhatstudentswillincludeintheirportfolio.Portfolioscancontai narangeofitems–plans,reports,essays,resume,checklists,self-assessments, references from employers or supervisors, audio andvideo clips. In a showcase portfolio, students include work completednear the end of their program. In a developmental portfolio, studentsincludeworkcompletedearlyandlateintheprogramsothatdevelopmentcan be judged.
- Identify or develop the scoring criteria (e.g., a rubric) to judge thequalityofthe portfolio.
- Establish standards of performance and examples (e.g., examples of ahigh,medium,andlowscoringportfolio).
- Createstudentinstructionsthatspecifyhowstudentscollect,select,refl ect,format,andsubmit.

5.0 UsesofPortfolio

- Promotingstudentself-evaluation,reflection,andcriticalthinking.
- Measuringperformancebasedongenuinesamplesofstudentwork.
- Providingflexibilityinmeasuringhowstudentsaccomplishtheirlearni nggoals.
- Enablingteachersandstudentstosharetheresponsibilityforsettinglear ninggoalsandforevaluatingprogresstowardmeetingthosegoals.

- Givingstudentstheopportunitytohaveextensiveinputintothelearning process.
- Facilitatingcooperativelearningactivities,includingpeerevaluationa ndtutoring,cooperativelearninggroups,andpeer conferencing.
- Providingaprocess forstructuringlearninginstages.
- Providing opportunities for students and teachers to discuss learninggoalsandtheprogresstowardthosegoalsinstructuredandunstructuredconf erences.
- Enabling measurement of multiple dimensions of student progress byincludingdifferenttypesofdata andmaterials.

4.4. ConceptMapping



ConceptmapofConceptmapping

- ***Concept***

A concept map is a special form of a web diagram for exploring knowledgeand gathering and sharing information. Concept mapping is the strategyemployedindevelopingaconceptmap.Whichisavisualdepict ionofconcepts, ideas, theories, or questions. Concept maps can show existent ornew relations. They are aids to processing information, storing or retrievinginformation, andsolvingproblems.

Concept maps are visual representations of information. They can

take theformofcharts,graphicorganizers,tables,flowcharts,VennDiagrams,timelines, or T-charts. Concept maps are especially useful for students wholearn better visually, although they can benefit any type of learner. They area powerful study strategy because they help you see the big picture: bystartingwithhigher-levelconcepts,conceptmapshelpyouchunkinformationbased on meaningful connections. In other words, knowing the big picturemakesdetailsmore significantandeasier toremember.

Conceptmapsworkverywellforclassesorcontentthathavevisualelementsor in times when it is important to see and understand relationships betweendifferent things. They can also be used to analyze information and compareandcontrast.

- ***Importance***

Plotnick(1997)listsfivepurposesofconceptmapping:

- Togenerateideas(brainstorming,etc.)
- Todesignacomplexstructure(longtexts,hypermedia,largewebsites,etc.)
- Tocommunicatecomplexideas
- Toaidlearningbyexplicitlyintegratingnewandoldknowledge
- Toassessunderstandingordiagnosemisunderstanding.

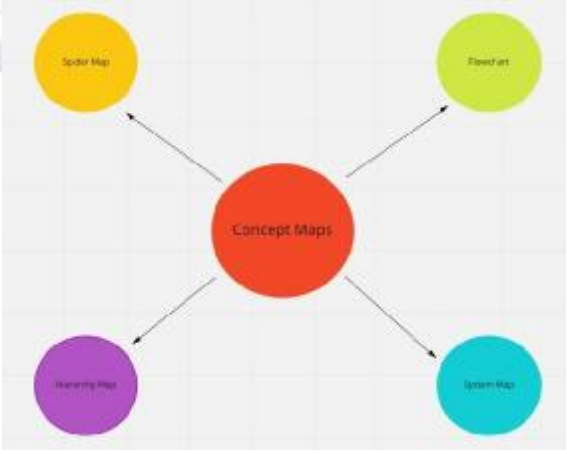
A concept map can help one do a number of different things in an easier andmoreeffectiveway.Conceptmappingcarriessignificantimportanceinfollowingways;

- **DIG INTO A TOPIC IN DETAIL:** When creating a concept

map, you startwith an overall concept and then work to identify sub-topics. That requiresthat you and your team really sink your teeth into the subject, rather thangraspingthe surface-levelinformation.

- **ORGANIZE YOUR THOUGHTS:** If you and your team participate in abrainstorming session or workshop, you're bound to end up with a ton ofideas.Thatbigjumblecanbedifficulttoacton,andaconceptmaphelpsyoumakesenseofthemina visual,easy-to-understandway.
- **REMEMBERIMPORTANTINFORMATION:**Studiesshowthatvisuallearning produces better recall than auditory learning. So, if you and yourteam need to work through a problem or understand a topic, a concept mapwillboostbothcomprehensionandretention.
- **UNDERSTAND RELATIONSHIPS:** The emphasis on relationships is thebiggest benefit of a concept map, as it exists to not only show you ideas buthow they relate to one another. This can help you and your team uncoverconnectionsthatyouwouldn'thaveidentifiedonyourown.

- ***<u>TypesofConceptMap</u>***



1. Spidermap

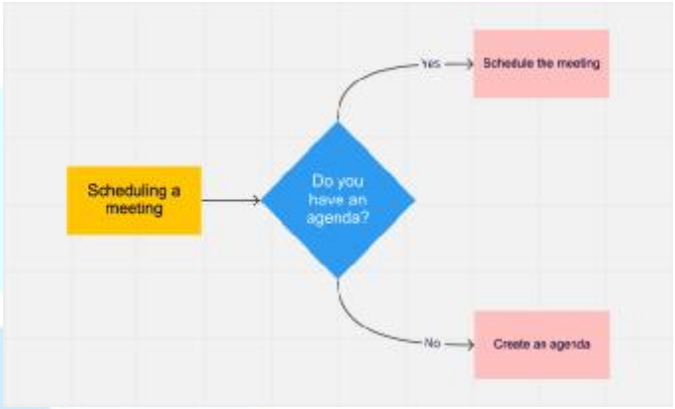
Thismapgetsitsnamebecauseitlooks a lot like a spider web. Onestarts with your core idea at thecenter,andthenbranchoutwardsto subtopics in a radial

pattern.Thesubtopicscanbranch outintosmaller subtopics, and so on andsoforth.

Anexampleofaspidermap

Whenyouhaveasingleideaorthemethatyouwanttobuildupon.

2. Flowchart



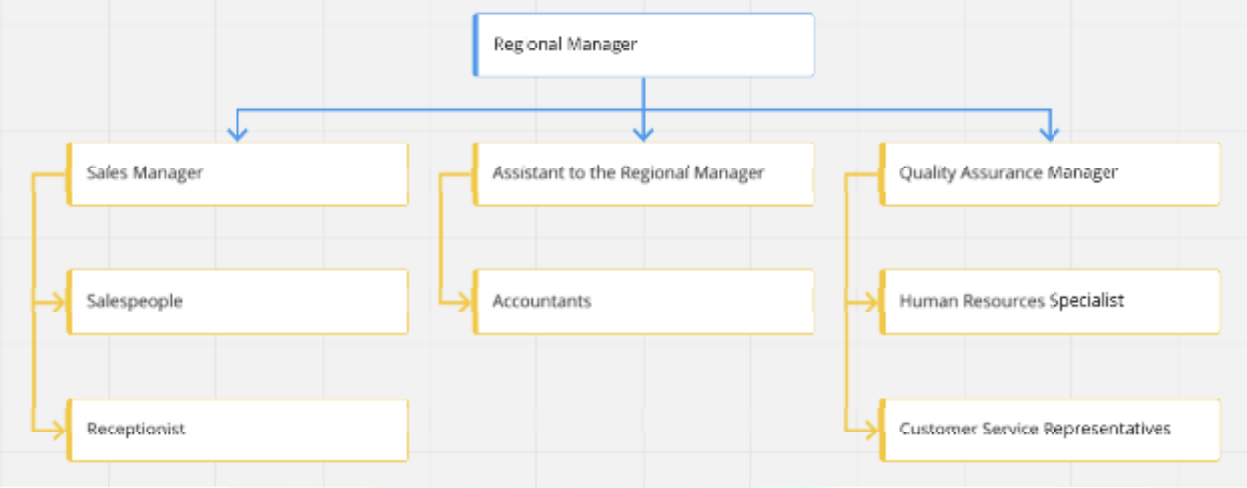
This concept map shows the steps ofaprocess.Typically,th earrowsrepresent different choices that aremadeoractionsthatar etaken—almost like you're choosing your ownadventure.A flowchart is also a type of conceptmap.

WHENTOUSEIT:

Whenyouneedtounderstandaprocessor makeadecision.

3. Hierarchymap

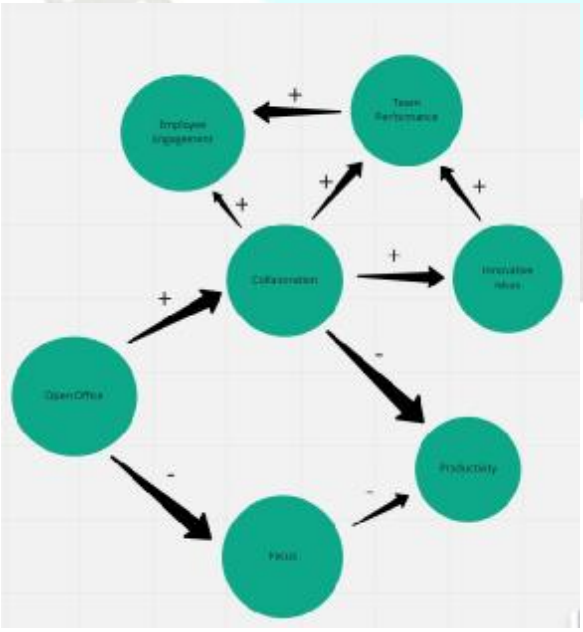
Ahierarchymapisatypeofconceptmapthatshowstheorderofsomethin g.For example, think about your company's organizational chart. That's anexample of a hierarchy map, as it shows people's roles and their levels ofsuperiority.



Ahierarchymapis atypeofconcept mapthatshowsstructureandorder

WHEN TO USE IT: When you need to understand the elements of a system,along with which elements are in the highest position and which are in thelowest.

4. Systemmap



A system map is undoubtedly the mostcomplex of all of the types of conceptmaps, as it shows all of the differentpartsofaconceptand howthey'reinterrelated.Conn ectinglinescanincludea"+"or a"-"tonotepositiveornegative correlations. They often endup looking like webs, but they don'tnecessarilyneedtomoveoutwardfromthecenterthewayaspiderma

pdoes.

Advantages

- Conceptmapshelpstudentsseethe“big-picture”andvisualizerelationships.
- Conceptmapsaregoodforprocessingandstoringlargeamountsofinfor mation.
- Throughlinks,conceptmapspresentinformationinadynamicmanner
- Conceptmapshelpstudentsdevelopmetacognitiveskills.

Disadvantages

- Theuseofconceptmapsmakescomparativerankingofstudents’workd ifficult.Sometimesallconceptmapslooksimilar.
- Evaluationismoretimeconsumingfortheinstructor(comparedtoamul tiplechoicequestion).
- In the process of scoring concept maps, a grading rubric should be used forconsistency.
- Students who have developed strong skills for factual memorization mightresistandbeintimidatedbyconceptmapsthatrequiretheirseeing relationshipsbetweenconcepts,ideas,theories,questions,etc.
- Students who are used to thinking at higher levels (as graduate studentsusuallyare)mayfindconceptmapsboringandtime-consuming.

KNOWLEDGECORNER

Step-by-StepInstructions

ForLearningFactualandConceptualKnowledge

- Introduce a concept that is familiar to all students, or ask students to startfromconceptual knowledgetheyarefamiliarwith
- Havestudentswritedown10additionalconceptsthattheyassociatewithismainconcept
- Askthemtorankthe10conceptsfrom“mostgeneralandinclusive”to“leastgeneral and inclusive” or from “most important” to “least important.” Thisstepwill requireseveralminutes.
- Tell students to write the “most general” or “most important” concept nearthe top of a large piece of paper. Have them enclose this “superordinateconcept” in a box or oval. Use pencils instead of pens! (*Post-its*are excellentforthis step.)
- Explain that you want them to connect concepts from their list, one pair at atime with directional links and, most importantly, to label the linking lines.Continuethisprocessuntil allconceptsappearonthemap.
- Give students plenty of time. Encourage them to include a lot of branchingand many levels of hierarchy. Put special emphasis on cross-linking conceptsin one area of the map with those in other areas. Note that they may add asmanyadditionalconceptsastheywishtomaketheirmapsuniqueand personally meaningful. Remind them that the boxes or ovals should containonly one or two words or a very short and clear description of the concept.Tellthemthattheymay re-drawtheirmapsasoftenasthey wish.
- Encouragecreativity.
- Select several students to share their maps with the class. You

could providea transparency for each group to display their maps. Focus attention onappropriateconnectionsbetweenconcepts.

- Remindstudentsthatconceptmapsmaybeaveryhelpfulwaytostudy.They can be used to condense many pages of textbook verbiage into a succinctsummary. Concept maps make useful visual aids for presenting relationshipsbetween theoretical concepts and help users come up with a new researchquestions,orsolutionstoaproblem.
- In the next class, introduce a central concept from your course and ask yourstudents to construct a concept map on this topic. Collect the maps andreviewthem,butdon'tgrade them.Youmaywanttosuggestwaysthemapscouldbeimproved.
- Return the maps to the students and suggest that they rethink some of theirideas.Askthemtousedifferentcoloredpencilsforeachiterationso studentsmay depict and emphasize how their ideas change over time. The same mapmay be used for several class periods, and students may be encouraged toaddto,delete,reorganizeorevenbeginanewwhenevertheyneedtodo so.