

# DIGITAL SKILLS

*RSW: An Initiative of the Lagos State Ministry of Education*

# **WORKING WITH TOOLS AND TECHNOLOGY**

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# OBJECTIVES

- Learn basic technology skills that every employee needs to have
- Learn the importance and how to use Office tools e.g Excel, Word, Powerpoint, Outlook etc.
- Learn the importance of internet/email security and how to avoid it
- Learn about social media etiquette
- CREATE A LINKEDIN PROFILE!!!

# TECHNOLOGY IN THE WORKPLACE

- The technology skills that you need vary and may depend on the kind of job you want.
- Employees who are skilled at using different technology applications **are much more likely to be hired by employers, and have a greater chance of success in their roles.**
- **The vast majority of entry-level job adverts now require that candidates have basic IT skills.**
- The pace at which new technological solutions are being developed means that professionals must constantly update their skills, in order to remain relevant

# CLASS ACTIVITY

Break into groups and pick a company of your choice.

- List all the ways that technology can be used to improve efficiency and increase profits.
- List all the tools/software/ technologies that could be used to achieve this.

A representative from each group is to make a 3-5 minute presentation to the class.

# TECHNOLOGY IN THE WORKPLACE (II)

Technology is used by businesses in a number of ways, including:

- To increase efficiency and productivity
- For research and information gathering
- For information storage and retrieval
- For marketing and communication
- For training activities
- For customer service delivery

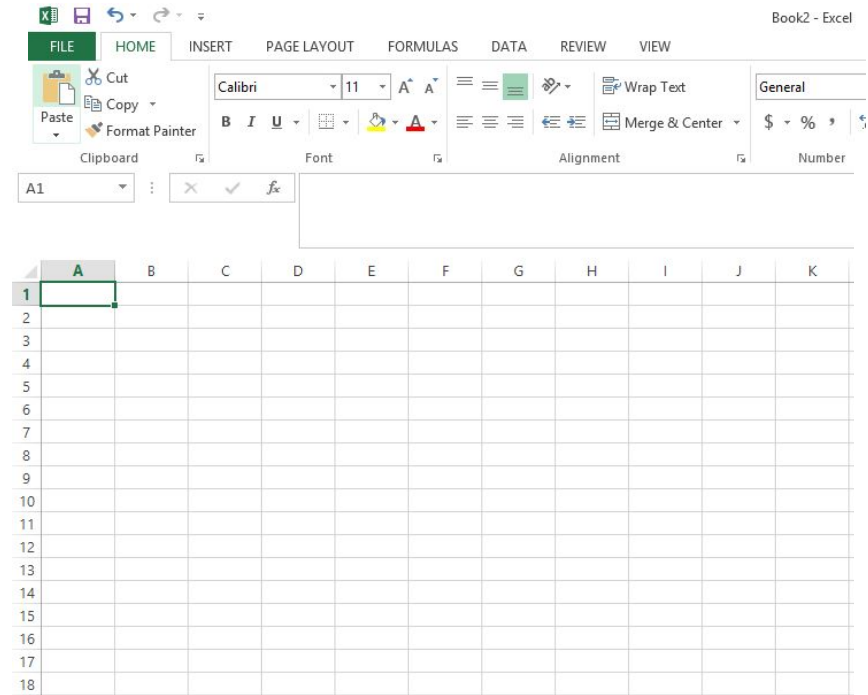
# USING TECHNOLOGY IN THE WORKPLACE

There are some basic technology skills that every employee needs to have.

- Spreadsheets, Word processing and Presentation
- Email
- Web and Social Skills

# SPREADSHEETS

- Spreadsheets consist of rows and columns and are used to record and analyse data
- The most commonly used software for spreadsheets is **Microsoft Excel**
- Spreadsheets are most commonly used in fields that require working with data, including financial analysis, research, accounting, reporting, administration





# SPREADSHEETS – PROFICIENCY CHECKLIST

## Beginner:

- Graphs
- Formatting Cells, Tables
- Basic Formulas (SUM, AVERAGE etc.)
- Data Sorting
- Chart Design

## Intermediate:

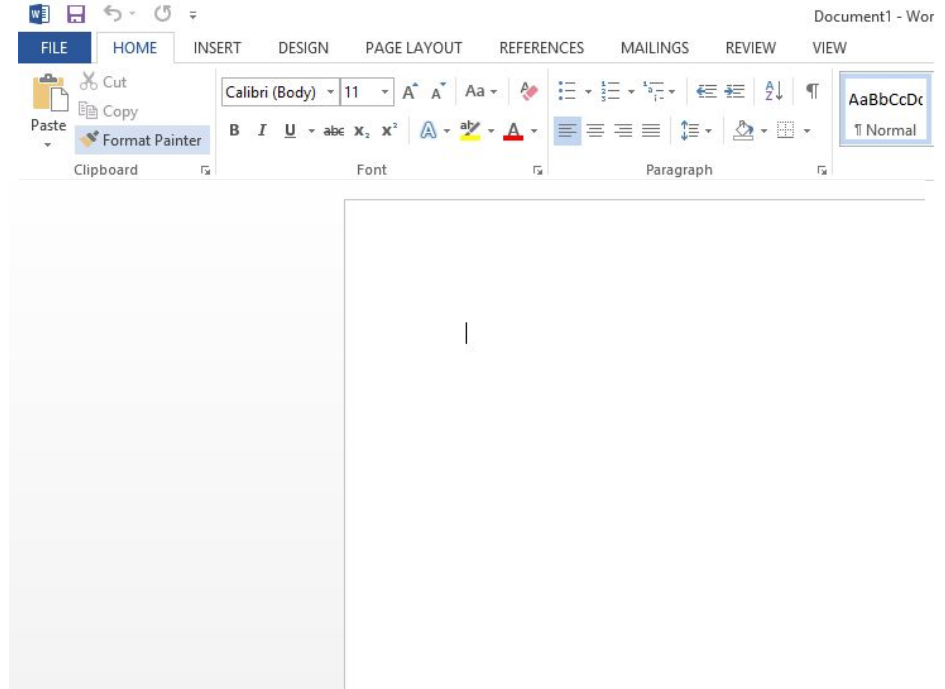
- Pivot Tables
- More advanced formulas (IF-THEN, TRANSPOSE etc)
- Conditional Formatting

## Advanced:

- Custom Macros
- Vlookups
- Linking data
- Automation

# WORD PROCESSING

- Word processing software is used to create, edit and format written documents
- Frequently used in the workplace
- Most commonly used word processor is **Microsoft Word**
- Used for creation of documents such as business letters, reports, CV, Cover Letters, Proposals



# WORD PROCESSING - PROFICIENCY CHECKLIST

## Beginner:

- Create, save and share a letter / document via email
- Format, resize text
- Format, resize, rotate shapes
- Insert table
- Copy, Cut, Paste, Delete
- Find and Replace text
- Spelling and Grammar check
- Add a Table
- Add a Text Box
- Format Page
- Save / Protect Document

## Intermediate:

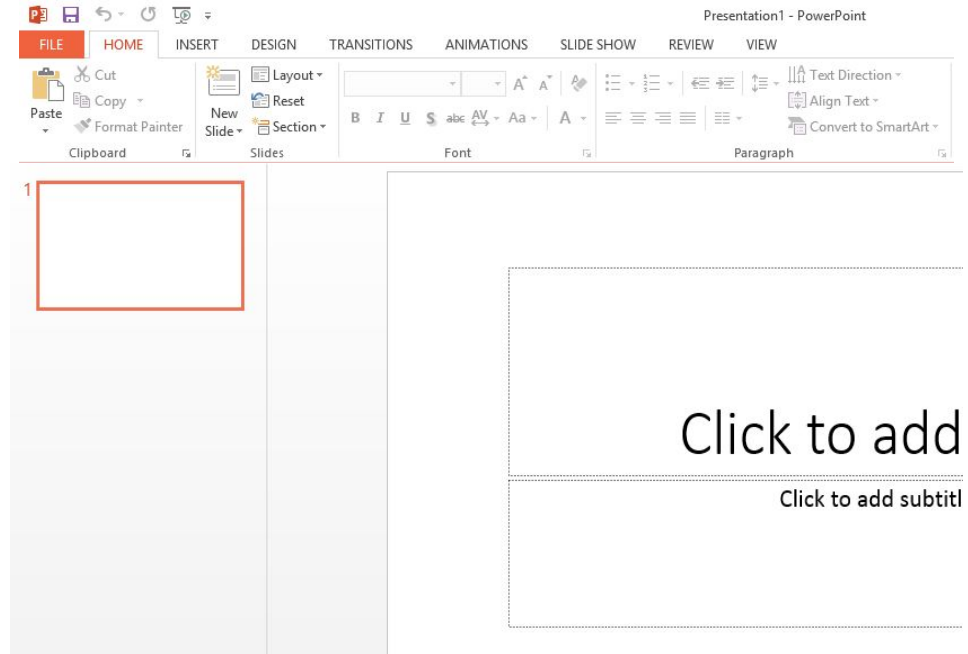
- Convert to a different file type
- Use graphics

## Advanced

- Insert header/footer
- Add table of contents

# PRESENTATIONS

- Presentation software is used to prepare and deliver computer-based presentations
- Most commonly used software is **Microsoft Powerpoint**
- Most often used in roles that require presenting ideas or business information to an audience, e.g. business proposals, marketing strategies, departmental performance reports, training, etc.



# PRESENTATIONS – PROFICIENCY CHECKLIST

## Beginner:

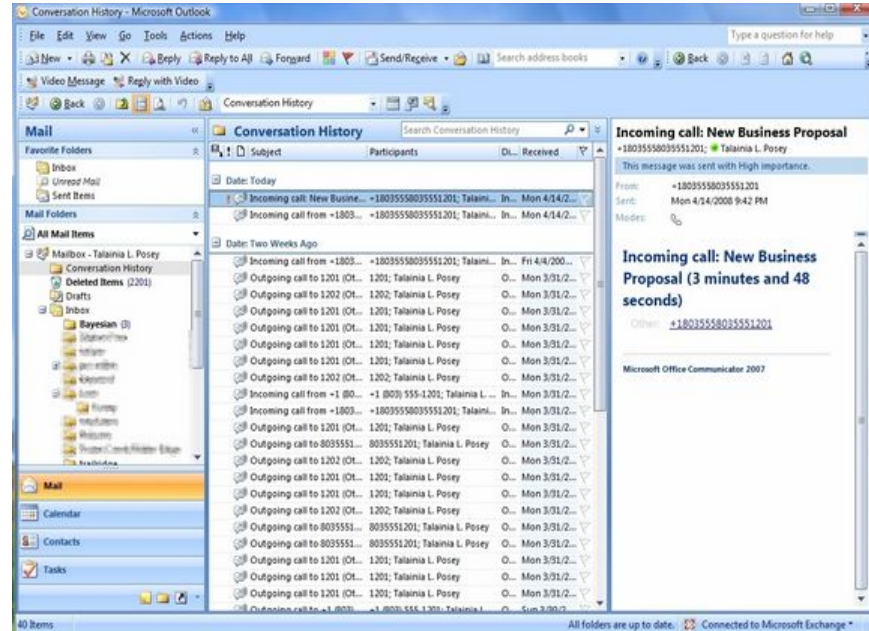
- Create new presentations
- Open, edit and close presentations
- Insert slides from other presentations
- Format shapes
- Animations & Transitions
- Select / Change Design
- Insert shapes or Wordart
- Resize / rotate objects
- Specifying transition timing
- Setting up slide shows

## Intermediate:

- Creating custom themes
- Adding movie and sound clips
- Modifying clip art colours, background fills
- Reordering slide effects
- Drawing tables
- Animating objects
- Creating a hyperlink

# EMAIL

- Business email software is used to send emails within and outside the company
- Most commonly used email software is Microsoft Outlook
- Used in most roles that require communication within or outside the business



# EMAIL – PROFICIENCY CHECKLIST

## Beginner:

- Setup new email accounts
- Compose and send emails
- Read, reply and forward an email
- Attach a file to an email
- Configure junk mail
- Create/modify a personal folder
- Create a to-do item
- Create a calendar item
- Set a reminder
- Schedule a meeting
- Respond to a meeting request

## Intermediate / Advanced:

- Create a task
- Assign a task
- Create and manage notes
- Create / modify a signature
- Apply a theme
- Search for messages
- Filter messages
- Archive messages
- Create auto-response
- Set up multiple email accounts

# GROUP ACTIVITY – OFFICE TOOLS

For each of the following tasks, which of the three mentioned software would you consider most appropriate? (Word, Excel, Powerpoint):

- Your boss has asked you to prepare a report showing your team's performance over the last month. The report should include profits made in the last month, details of last month's activities, achievements, challenges and plans for future growth.
- You have been given a list of 1000 customers' first and last names and addresses, and asked to sort the list alphabetically, by customers' last names
- You require some funding for a new project for your team, and your boss has asked you to justify the request
- You are writing a job application



## GROUP ACTIVITY – OFFICE TOOLS (II)

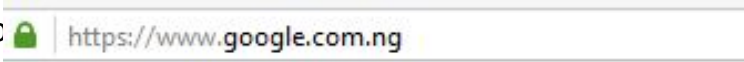
- You have been asked to collate name, date of birth and email address of all 60 people in your department. You are to contact the people individually by email to ask for this information. You are to attach a document to your email, on which they are to write these details and send back to you.
- Your team has observed that sales were particularly low last month. You have been asked to prepare a document that compares sales for the (last) 6 months, and (suggest) ways to improve sales in the next 6 months
- You and your team have just thought of a new product idea and you need management buy-in. Management has asked you to present a business case for this request.

## GROUP ACTIVITY - OFFICE TOOLS (III)

- You have been asked to create a graph that compares sales for 2014 and 2015
- You want to request for a document from a colleague in another department
- You have a job interview, and you have been asked to prepare a document about “The Benefits of Technology in Business”, which you will stand up to discuss for 15 minutes
- You have been asked to prepare a departmental end-of-year report
- You want to schedule a meeting with colleagues from other departments

# INTERNET/EMAIL SECURITY

The key to internet and email security is to practice caution. Here are some tips for internet safety:

- Avoid unfamiliar websites
- Use strong passwords
- Do not download documents from websites that you do not absolutely trust
- Look out for the https urls
- Think before you send sensitive info 
- Pause before you open links or attachments in emails. If unsure about their legitimacy, contact the source through other means to establish if they sent you the email
- Report all suspicious emails to your IT department
- If you think your computer may be compromised in any way, immediately report it to your IT team

# SOCIAL MEDIA AND BUSINESS

- Most businesses have a Social Media presence.
- Social Media websites are changing the way that customers interact with businesses.
- You may be asked by your company to manage the company social media accounts.
- The way you conduct yourself on social media accounts is a reflection of your organisation.

# SOCIAL MEDIA PLATFORMS AND BUSINESS

- Social Media channels like Facebook, Twitter and Instagram have become important tools for marketing one's business.
- Some benefits of social media on business include:
  - Increase in brand awareness
  - Learning about customers/target audience
  - Improving the customer service experience
  - Increase in sales
  - Increase in customer loyalty

**Facebook:** This platform is probably the largest and most impactful social network, and is essential for any business that wants to engage with its customers online.

**Twitter:** This platform is also for any business that is interested in engaging clients. However, be ready and quick with your “smart” responses to customers.

**Instagram:** This is a more visual platform for digital marketing, compared to the others. It enables engagement between you and your customers by posting, sharing and commenting on pictures.

# SOCIAL MEDIA ETIQUETTE

- Separate personal and business social media accounts
- Observe your company's social media policies, in terms of what kind of content you are able to publish
- Keep all content professional and relevant to your company
- Always spell check for grammar and spelling before posting comments
- Keep all communication with customers professional
- Offer information that is of value to your audience
- Do not delve into politics, debate or other potentially controversial discussions
- Remember that you are representing your company and not yourself
- Be careful about what you post. Remember that information published on social media becomes public, and may be available even after you delete it (screenshots may be taken by viewers)

# SOCIAL MEDIA AND BUSINESS: CLASS ACTIVITY

In small groups, discuss the following:

- More and more businesses are establishing a presence on Social Media. Select a company of your choice, and discuss how they are using Social Media.

*A member of the group will present the group's findings to the class.*

# SOCIAL NETWORKING: LINKEDIN

- LinkedIn is a **professional social network** for job seekers and businesses.
- It provides the opportunity to connect with professionals and businesses within your industry.
- As a job-seeker, this is a great platform to advertise your skills, experiences and accomplishments to get the attention of recruiters.
- LinkedIn also recommends jobs that are relevant to you and match the details in your profile.
- It also enables you to visit the pages of companies you are interested in working for, and track job opportunities.
- **If you do not have a LinkedIn profile, get one now!**
- **If you do have a LinkedIn profile, make sure it is up to date and professional enough**

**ACTIVITY:** Have students set up their LinkedIn profiles



# **CODELAGOS**



# OBJECTIVES

- Introduce participants to basic coding skills
- Learn the core principles of Computational Thinking

# CODE LAGOS



[www.codelagos.org](http://www.codelagos.org)

# The Future of Lagos is Tech Driven

With an exponentially increasing youthful population and the digitalisation of every facet of work and life, an investment in Tech Education is not only important - it is an imperative.

# Vision

To make Lagos State the  
Technology Frontier in Africa

## Goal

Our short term goal is to  
Teach **1,000,000** Lagosians to  
Code by **2019**

# Objectives of CodeLagos

Position students in Lagos State to:

- ☐ Approach the world of work as problem solvers
- ☐ Come up with Innovative Solutions to local problems
- ☐ Meet the growing demand for tech skills
- ☐ Harness, create, and leverage on local & global opportunities

# Framework

Learning to code unlocks a variety of capabilities, including:

- ☐ Logical reasoning
- ☐ Problem solving
- ☐ Design thinking
- ☐ Creativity, among others.





# FOUR PILLARS OF CODING

## Foundations: The Basics

Computing Systems: Devices |  
Technology Glossary & Terms

The Internet

Coding Concepts: Loop | Events |  
Sequencing | Conditionals | Boolean  
etc.

## Think: The Essentials of Computational Thinking

Abstraction

Generalization & Pattern Recognition

Decomposition

Algorithms & Programming

Debugging

## Life Skills: Beyond Coding

Collaboration

Communication

Creativity

Problem Solving

Responsibility: Cybersecurity | Ethical  
Use

## Pathways: Where will Coding Take You?

Coding Means Business

Coding for Solutions

# WHAT IS CODING?

- Coding is the act of giving instructions to a computer to accomplish a task or simply put, Coding is telling the computer what to do
- Coding is what makes it possible to create computer software, apps and websites. Your browser, your OS, the apps on your phone, Facebook
- Here's a simple example of code, written in the Python language

```
print 'Hello, world!'
```

# WHY LEARN TO CODE

- Develops logic and problem-solving skills
- Develops creativity
- Improves attention to detail
- It's fun!

# ANYONE CAN CODE

New tools, like Scratch, allow ANYONE to code without learning complicated syntax.



# STATEMENTS

In coding, a **statement** is simply a directive that tells the computer to do something. It is a command or an instruction.

For instance, In Scratch, any block whose label reads like a command is a statement.



# BOOLEAN

Sometimes, you only want a statement to be executed under certain conditions. Such conditions are defined in terms of Boolean expressions.

In coding, a **Boolean expression** is an expression that is either true or false

# CONDITIONS

In coding, a **condition** is something that must be true in order for something to happen.

A condition is thus said to "evaluate to true" or "evaluate to false."

# LOOPS

A **loop** can induce multiple executions of statements.

In Scratch, any block whose label begins with "forever" or "repeat" is a looping construct.



# PATHWAYS

Where will Coding lead me to?

- Coding is Business
- Coding for Impact



# PATHWAYS

## Coding Connects

music    business manufacturing    communications  
advertising    engineering    accounting    the arts  
safety systems    science  
criminal justice    recreation  
veterinary medicine    sports  
agriculture    pharmaceuticals  
banking    law    automotive  
photography    military  
architecture    medicine    entertainment    design  
politics    journalism    transportation    health care

Only **50%** of  
tech jobs are  
at technology  
companies

# PATHWAYS

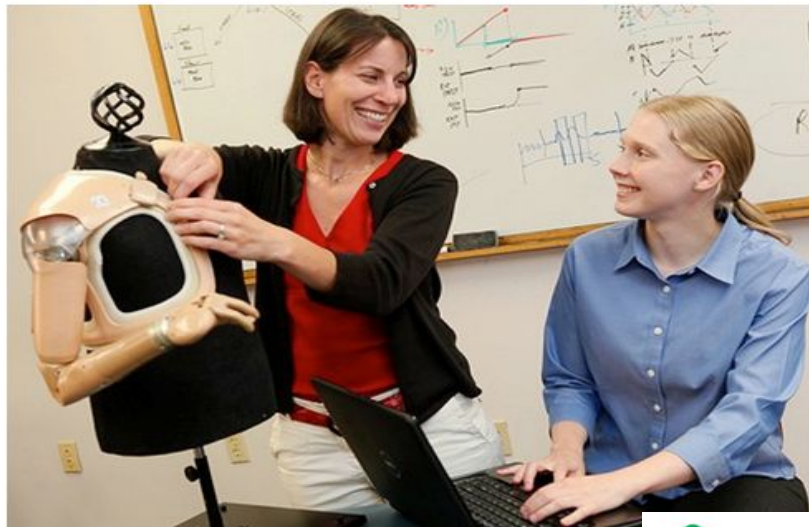
## Computing Connects to Other Careers

*For instance: Are you interested in **health fields**?  
You might want to study...*

...**robotics** and invent  
digital prostheses

...**computer  
engineering** and build  
the next generation of laser  
surgical tools

...**bioinformatics** and  
design a life-saving drug



# PATHWAYS

**Are you someone who:**

- Understands relationships?
- Likes to do things efficiently?
- Is interested in business and connecting people?



# PATHWAYS

A career in Tech might be right for you if you have...

- Curiosity and imagination
- Flexible, creative thinking
- Work ethic – make an effort in math and science
- Communication skills in order to tackle challenges with others



# PATHWAYS

***Learning to code can get you started in some of the fields listed below:***

- Human Computer Interactions
- Problem Solving
- Web Design/Development
- Mobile App Development
- Introduction to Programming
- Robotics
- Computing Applications
- Mobile Games

# ROLE OF ICT IN BUSINESS

- **Information and communications technology (ICT)** is often used as an extended synonym for **information technology (IT)**, but is a more specific term that stresses the role of unified communications and the telecommunications (telephone lines and wireless signals), computers as well as necessary enterprise software, storage, and audio-visual systems, which enable users to access, store, transmit, and manipulate information.
- **Information Communication Technology (ICT)** is a generic name used to describe a range of technologies for gathering, storing, retrieving, processing, analysing, and transmitting information.

# ICT IN BUSINESS

ICT in a business environment can be used for:

- Recording Data, Storing data, Manipulating data and Retrieving data

ICT is Used in

- Administration - Invoices, Communication, Emails
- Business, Finance and Accounting - Business Plans, Financial forecasting, Auditing, Market Analysis, Research, Recording Transactions
- Communications - email, instant messages, mobile phones
- Engineering and Creative Art - 2D and 3D Drawing, Modelling, Simulation
- Wildlife and Tourism and Hospitality - Animal Tracking, Hotel booking, GIS



# CHANGING BUSINESS LANDSCAPE

The term “global” includes: global markets, global customers, global suppliers, global shareholders, and global opportunities. Highly competitive with companies competing across national boundaries

## Business

- Globalization
- Deregulation
- Competition

## Technology

- Power of the Web
- Information vs. data

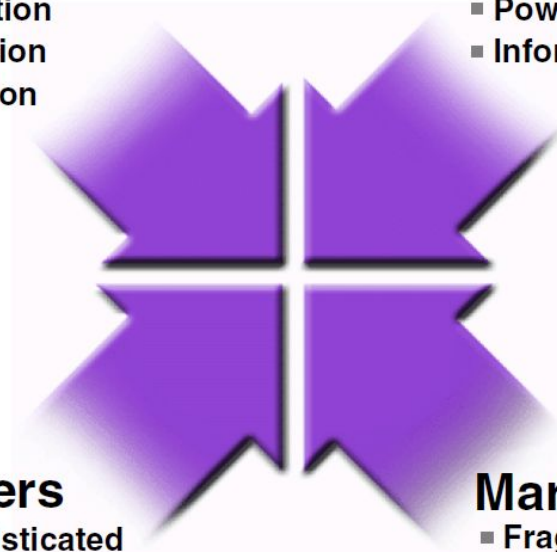
Global reach of Internet Technology: mobile phones can handle Internet communications  
Pervasive Computing- idea of putting powerful computer chips and functions into everyday things such as cars or household appliances. Fridges can now scan itself and inform you to procure goods online using GPS and location technologies

## Customers

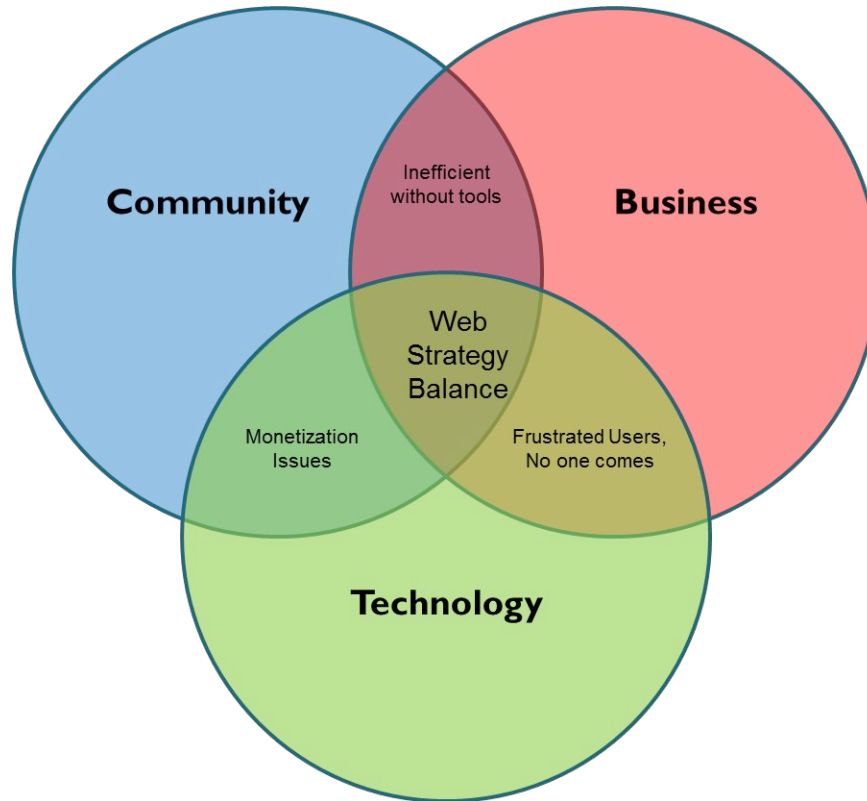
- More sophisticated
- More demanding

## Markets

- Fragmented
- Mass customization



# THREE SPHERES OF WEB STRATEGY



# TECHNOLOGICAL COMPONENTS

## Hardware



## Software

### Application Software

Word Processing  
Spreadsheet  
Graphics  
Games  
Communication  
Graphics  
Databases

### Systems Software

Operating Systems  
File Management  
Tools  
Utilities  
Compilers  
Debuggers  
Assembler

# INTERNET, EMAIL & E-COMMERCE

## Internet

Global Market Place  
E-Commerce  
Market Performance  
Price Comparison Sites

## E-Mail

Messages can be sent to individuals  
and groups  
Quick Information Transfer

## E-Commerce

Shopping 24/7  
Low Overheads  
Global Market  
E-Marketing

# HOW SOFTWARE IMPROVES EFFICIENCY

- **Speed- Quicker** processing times saves the business time and money. Transactions are processed quicker in real-time
- **Accuracy** - with the use of verification and validation, data can be inputted more accurately. This can help with decision making.
- **Data Handling** - Can be inputted and manipulated anywhere on the market
- **User friendly** - Easy to use
- **Capacity** - Large quantity of data can be held with very little physical space

# COMPUTER NETWORK

- A computer network is a group of computers connected to each other electronically.
- This means that the computers can "talk" to each other and that every computer in the network can send information to the others.
- The components of a computer network include: a computer, the router, the gateway, the bridge networking device, the switch for networking and the hub. Most of these are data terminal equipment and components of networking that are tasked with receiving or generating data.
- A **virtual private Network (VPN)** extends a private network across a public network, such as the Internet.

# DEFINITION OF TERMS

- A **database** is an organized collection of [data](#).
- A **computer** is a general purpose device that can be programmed to carry out a set of arithmetic or logical operations
- A **router** is a device that forwards data packets between computer networks, creating an overlay internetwork.
- A network **switch** (sometimes known as a **switching** hub) is a computer networking device that is used to connect devices together on a computer network.

# E-BUSINESS

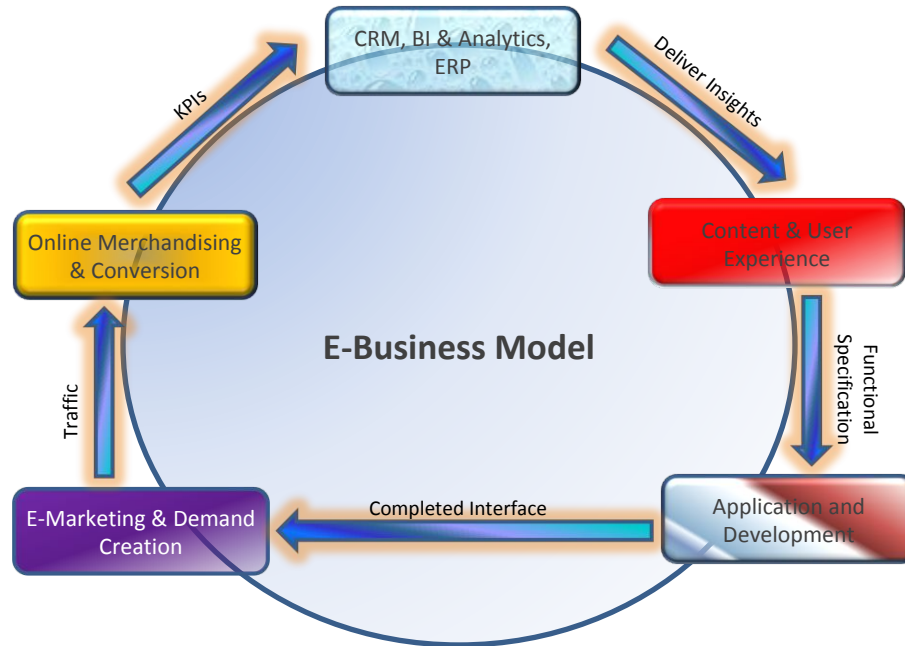
- It is the transformation of an organization's processes to deliver additional customer value through the application of technologies, philosophies and computing paradigm of the new economy
- Three primary processes are enhanced in e-business:
  - **Production processes**, which include procurement, ordering and replenishment of stocks; processing of payments; electronic links with suppliers; and production control processes, among others;
  - **Customer-focused processes**, which include promotional and marketing efforts, selling over the Internet, processing of customers' purchase orders and payments, and customer support, among others; and
  - **Internal management processes**, which include employee services, training, internal information-sharing, video-conferencing, and recruiting.



# E-BUSINESS

- The major different types of e-Business are:
  - Business -to- business (B2B);
  - Business to-consumer (B2C);
  - Business -to- government (B2G);
  - Consumer -to- consumer (C2C);
  - Mobile commerce (m-commerce).

# E-BUSINESS COMPONENTS



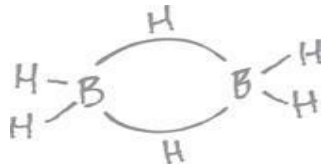
- **Content & User Experience**
  - Content Strategy
  - User Experience (UX) & Design
  - Information Architecture (IA)
  - Usability & QA Testing
- **Application & Development**
  - Web development
  - Data Warehousing & ETL
  - Product data management
  - Integration with business partners
  - Operations (Order placement, order processing, & supply chain management)
- **E-Marketing & Demand Creation**
  - Direct Marketing
  - Email Marketing
  - Search Engine Marketing, Search Engine Optimisation, Online Advertising
  - Social Media management & monitoring
- **Online Merchandising & Conversion**
  - Internal Site Search (searches performed on the website, *not* in a public search engine like Google)
  - A/B & Multivariate Testing
  - Online Merchandising
- **CRM, BI, & Analytics**
  - Customer Relationship Management & Database management
  - Business Intelligence
  - Competitive Intelligence and Web Analytics

# COMPUTATIONAL THINKING: AN IMPORTANT SKILL FOR ALL STUDENTS

- What is CT?

Critical Thinking + Computing Power

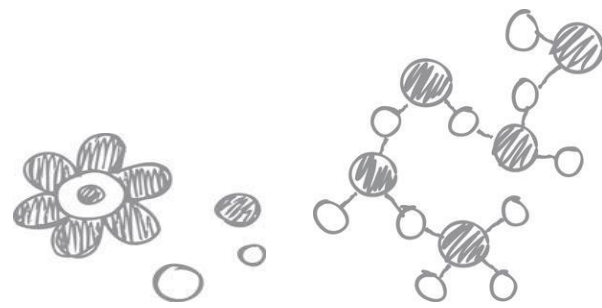
= Making Decisions or Innovating Solutions



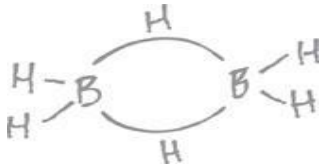
Manipulate")

(Think "Create, Produce,

# WHAT IS CT?



- The core principles of Computer Science are the basis for Computational Thinking.
- CT is the use of CS principles in problem domains

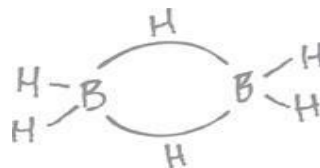
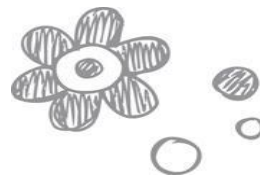


# WHAT ARE THESE CORE PRINCIPLES?

There are 9 concepts:

- Data Collection, Data Analysis, Data Representation
- Problem Decomposition, Abstraction
- Algorithms, Automation
- Simulation and Modeling, Parallelization

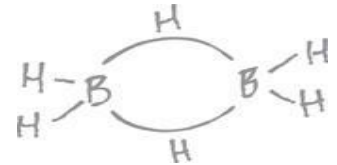
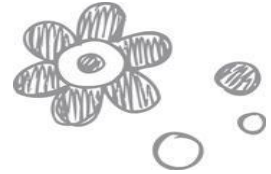
These are all essential to computer science – *you can talk about all of these without directly involving a computer*



# WHAT ARE THESE CORE PRINCIPLES?

- There are 5 dispositions
  - Confidence with complexity
  - Persistence in working through problems
  - Ability to deal with open-ended problems
  - Ability to communicate and collaborate to achieve a common goal
  - Tolerance for ambiguity

→ Included in 21st Century Skills



# CT FOR ALL STUDENTS

The knowledge and skills that students need to **know** and be **able to do** by the time they graduate from secondary school.

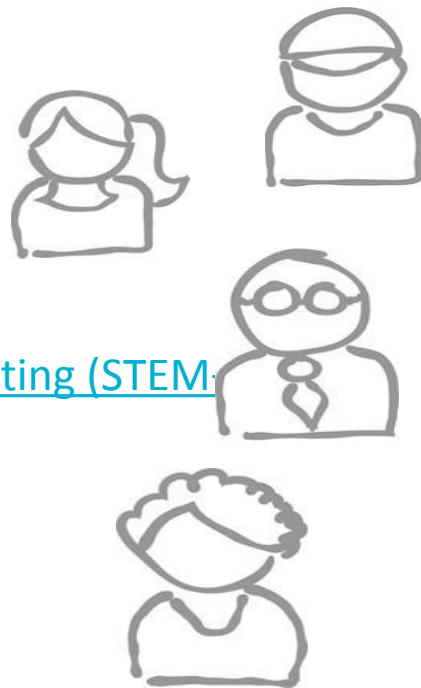


# WHERE DO YOU FIND CT?



In CS

- CSTA K-12 Computer Science Standards
  - [Exploring Computer Science](#) course
  - [APCS Principles](#) course
  - [Code Studio](#) K5 curriculum
- Required for any National Science Foundation [“STEM + Computing \(STEM\) Proposal](#)





# WHERE ELSE DO YOU FIND CT?

- Technology and more specifically CS is part of almost all endeavors of life
- Every 21st century citizen needs to have facility with computational thinking



# DO YOU KNOW TO FIND CT IN LESSONS?

## Computational Thinking Video



Words!

### Decompose

Say it with me: De-com-pose

*Break a problem down into smaller pieces*

### Pattern Matching

Say it with me: Pat-ern Mat-ching

*Finding similarities between things*

### Abstraction

Say it with me: Ab-strac-shun

*Pulling out specific differences to make one solution work for multiple problems*

### Algorithm

Say it with me: Al-go-ri-thm

*A list of steps that you can follow to finish a task*

# STOP AND “CHAT”

Here are the 9 CT concepts

- Data Collection, Data Analysis, Data Representation
- Problem Decomposition, Abstraction
- Algorithms, Automation
- Simulation and Modeling, Parallelization



*As you think about what you teach, can you think of a lesson, topic, unit where one or more of these concepts would appear?*

*Or try the [Code.org](https://code.org) Unplugged CT Assessment*

# CT IS FOR ALL TEACHERS

All teachers can and should be responsible for teaching skills, practice, and assessment of CT. This is not a “computer thing”.



# CT IS FOR ALL TEACHERS

Most teachers already incorporate CT basics, but may not know it.



# CT IS FOR ALL TEACHERS

CT has a shared vocabulary that can be highlighted in lessons from every discipline.



# CT IS FOR ALL TEACHERS

CT is made up of foundational building blocks of concepts, skills, and dispositions that get more sophisticated as students get older.



# CT IS FOR ALL TEACHERS

CT doesn't necessarily require computers.



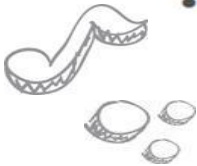


# CT OPERATIONAL DEFINITION (HANDOUT)

## Operational Definition of Computational Thinking for K–12 Education

Computational thinking (CT) is a problem-solving process that includes (but is not limited to) the following characteristics:

- Formulating problems in a way that enables us to use a computer and other tools to help solve them.
- Logically organizing and analyzing data
- Representing data through abstractions such as models and simulations
- Automating solutions through algorithmic thinking (a series of ordered steps)
- Identifying, analyzing, and implementing possible solutions with the goal of achieving the most efficient and effective combination of steps and resources
- Generalizing and transferring this problem solving process to a wide variety of problems



# CT OPERATIONAL DEFINITION

Computational Thinking is the marriage of:

- the big ideas in computer science (such as abstraction, algorithms, modeling, problem decomposition)
- with problems and big ideas in most other subject matter domains



# CT BUILDING BLOCKS (HANDOUT)

## C | CT Vocabulary and Progression Chart

	Definition	Grades PK to 2	Grades 3 to 5
<b>Data Collection</b>	The process of gathering appropriate information	Conduct an experiment to find the fastest toy car down an incline and record the order of cars across the finish line in a chart.	Review examples of writing to identify strategies for writing an essay.
<b>Data Analysis</b>	Making sense of data, finding patterns, and drawing conclusions	Make generalizations about the order of finishing a toy car race based on the characteristics of the car with a focus on weight. Test conclusions by adding weight to cars to change results.	Categorize strong and weak examples of writing samples to develop a rubric.
<b>Data Representation</b>	Depicting and organizing data in appropriate graphs, charts, words, or images	Create a chart or a line drawing that shows how the speed of a toy car changes when its weight is changed.	Match each writing sample to the rubric and create a chart showing which example best fits in each category of the rubric.

# CT BUILDING BLOCKS (HANDOUT)

CT Concept, Capability	CS	Math	Science	Social Studies	Language Arts
Data collection	Find a data source for a problem area	Find a data source for a problem area, for example, flipping coins or throwing dice	Collect data from an experiment	Study battle statistics or population data	Do linguistic analysis of sentences
Data analysis	Write a program to do basic statistical calculations on a set of data	Count occurrences of flips, dice throws and analyzing results	Analyze data from an experiment	Identify trends in data from statistics	Identify patterns for different sentence types
Data representation	Use data structures such as array, linked list, stack, queue, graph, hash table, etc.	Use histogram, pie chart, bar chart to represent data; use sets, lists, graphs, etc. To contain data	Summarize data from an experiment	Summarize and represent trends	Represent patterns of different sentence types
Problem Decomposition	Define objects and methods; define main and functions	Apply order of operations in an expression	Do a species classification		Write an outline

graphs, charts, words, or images

is changed.

fits in each category of the rubric.

# CT STATEMENT #1

CT is a key interdisciplinary component in preparing students to be successful in a globally competitive workforce.

- If students are going to be successful in postsecondary education and compete for and win jobs, they must have the critical thinking and problem-solving skills that CT provides (Wagner).

From ISTE CT Website, Computational Leadership Toolkit (8/22/11), p 42

Tony Wagner, Innovation Education Fellow, Technology and Entrepreneurship Center, Harvard U

## CT STATEMENT #2

CT is a critical enabling skill that will raise the level of achievement for all students, especially those who are traditionally marginalized.

- Successful students must be able to connect and apply academic content to real-world situations, and CT provides a framework for that learning connection (Marzano).

## CT STATEMENT #3

CT is already a learning strategy in many classrooms and lessons today. However, we need to more closely examine the uses of CT and identify and expand student and teacher awareness about its impact and power.

- This means we probably do not have to expend large sums of money. We just need to recognize and align CT strategies to current practices.

# CT PROMOTES 21ST CENTURY TRAINING

- Consuming content and parroting procedures is 19<sup>th</sup> and 20<sup>th</sup> Century
- 21<sup>st</sup> Century Education is about process, about learning tools and skills to remake content, create new learning and solve problems (think creators, producers)
- Not about just formal education in school but also about informal education – 24 hour learning – the network

Re-Imagining Learning in the 21<sup>st</sup> Century: MacArthur Foundation

[http://www.youtube.com/watch?v=D6\\_U6jOKsG4&feature=relmfu](http://www.youtube.com/watch?v=D6_U6jOKsG4&feature=relmfu)

Rethinking Learning: The 21<sup>st</sup> Century Learner: MacArthur Foundation

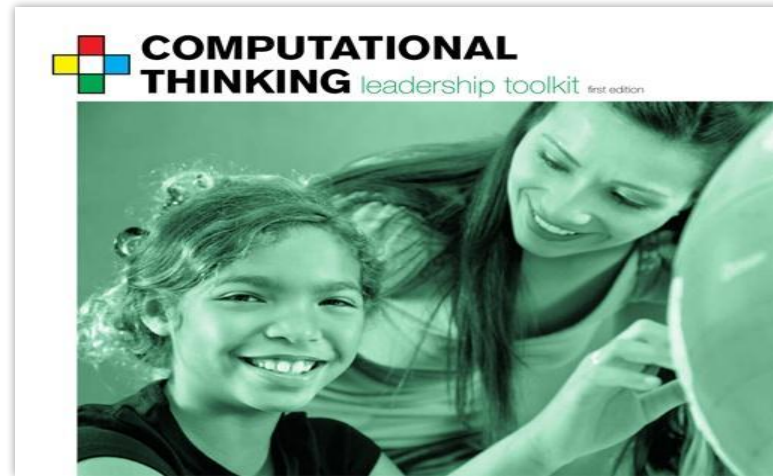
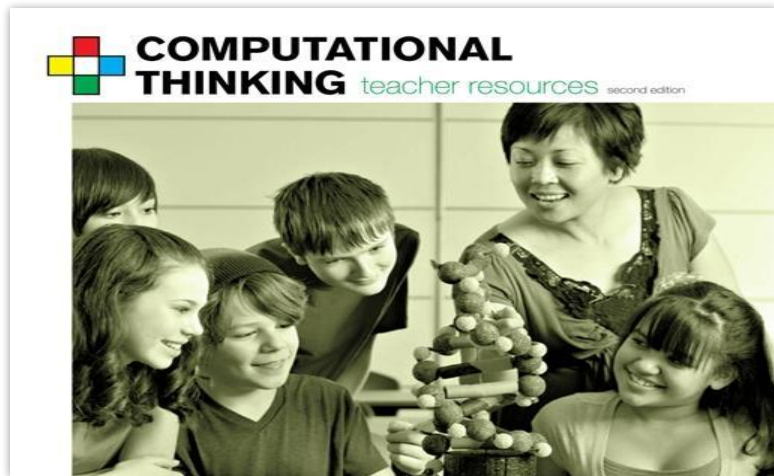
<http://www.youtube.com/watch?v=c0xa98cy-Rw&feature=relmfu>



# CT FEATURES

- Contextual
- Multidisciplinary
- Project-based and inquiry based
- Looking deeply at a problem
- Using abstraction + algorithms + analysis + bringing to bear any number of tools + possibly automation/computing

# CT RESOURCES



## CT Teacher Resources and CT Leadership Toolkit

For free download at [www.iste.org/computational-thinking](http://www.iste.org/computational-thinking)

*Coming Soon!* CT database for links to research and other teacher resources.

