

## INTRODUCTION TO INFORMATION AND COMMUNICATION TECHNOLOGY

### **The Current State of ICT**

Major technology and industry trends and societal and economic from today form a complex puzzle. And as society enters the digital world, the dynamic between technology and human society changes in a way that we are now only starting to fully understand.

**Information and Communication Technology (ICT)** is a range of technologies that advance communications. It enables communications processes such as broadcast media, networking components, and audiovisual processing and transmission systems allowing people and organizations to interact in the digital world.

The current state of ICT is as follows:

#### **Web Generations**

This technology comes from the innovations made from Web 1.0 to Web 2.0. Web 1.0 is the first generation of the Internet that Tim Berners-Lee pioneered in 1990 by writing fundamental technologies that became the foundation of the world wide web and the first webpage browser. Web 2.0 is the shift that happened in how the internet is used in the past 15-20 years. Making it possible for user-generated content to be viewed by people around the world in an instant.

Furthermore, Web 2.0 has been driven by innovations such as internet access and social networks that enable the dominance of applications that expanded online interactivity and utility.

Web 3.0 represents the next phase of this evolution of the Internet and could be as disruptive as Web 2.0 as it is built on the concepts of decentralization which aim for data to be stored in multiple locations simultaneously and not on a single server like how the Web 2.0 does, openness as being open-source software, and greater user utility using machine learning to enable computers to produce faster and more relevant results.

#### **Convergent Technologies**

This refers to where two or more independent technologies combine to form a new device. A smartphone is a great example where several independent technologies such as a telephone, camera, multimedia player, and navigation tool are integrated into a single device.

Convergent technologies have three key characteristics. First, they can perform multiple features to serve a blended purpose. Second, they can collect and use data in various formats and let machine learning techniques provide an enhanced user experience. And third, they are interconnected with other devices to offer universal access to users.

#### **Social Use**

The developments in ICT have made it possible to connect with people around the world instantly through social media. These are online services and tools used for publishing, sharing, and discussing information. This includes social networking sites (Facebook, Twitter, Instagram), forums (Reddit), community blogs (WordPress), and video-hosting sites (YouTube, Twitch) all aiming to provide faster and more interactive communication online.

#### **Assistive Technology**

It is any device, application, or equipment that supports people with disabilities to learn, communicate, and function with ease and comfort according to their condition. Applications such as ChromeVox which is a screen reader extension on Google Chrome and Capti which is used to easily listen to books online, listen to the news, and convert DOC and PDF files to speech are examples of this technology.

Other examples include speech-to-text, transcription, and subtitles features to help people with hearing problems and magnifier applications for people with eyesight problems.

The current state of ICT further brings society in understanding its benefits and how it can empower in achieving various social changes.

## Online Systems and Platforms

Online systems and platforms are a variety of services available on the Internet. It includes online marketplaces, search engines, creative content outlets, and communication platforms that users interact with according to their needs.

### Marketplaces

The two important features of an online marketplace are the sellers and buyers that trade products and services on an e-commerce website. Lazada, Foodpanda, and Facebook Marketplace are a few of the leading online stores in the Philippines that offers a wide range of products to their buyers, from clothes, food, and other essential needs.

In recent times, there has been an increase in interest in pursuing businesses online as it offers more benefits compared to traditional selling as it allows the business to function 24/7, it serves as an additional source of income, and it lessens marketing costs. Buyers also see this opportunity to shop in the comfort of their homes, compare prices across the platform, and have a wide range of options.

### Search Engines

A search engine is a web-based tool designed to retrieve information online specific to what the users need. Familiar examples include Google, Yahoo!, and Microsoft Bing.

Every search engine uses different ways to generate results by crawling and indexing all the data on the web and ranking them by relevance.

- **Crawl** – web crawlers, also known as spiders, constantly search the internet, find new sites, and identify new links to be used.
- **Index**: The gathered data by the crawlers is then analyzed, organized, and stored in an index for engines to find the information quickly when searched.

- **Search**: The search engine translates inputted words into terms that relate to its index using natural language processing (NLP) which uses machine learning to understand a query. The search engine then accesses its index to find web pages that match the query.
- **Rank**: Search engines have algorithms used to present a list of results organized by what it thinks is the best answer to the query based on matching the keywords used, prioritizing high-quality page content, and using personal information to tailor results to the user.

### Creative Content Outlets

These are websites that utilize different types of media to communicate products, services, and the person or brand itself. Creative content can refer to any of the following:

- **Blog** – it is written content run by a team or an individual, referred to as a blogger, that shares their opinion and knowledge on several topics for a target audience. WordPress, Tumblr, and LinkedIn are some of the common platforms for blog content.
- **Video** – creative video ranges from brand videos, animation, and educational videos to vlogs. This is a popular way to get a message across as video combines movement, sound, and text. YouTube, streaming sites, and learning management systems are the common platforms for this.
- **Infographics** – it is a collection of visual representations of information and data such as charts and graphs with minimal text compared to a traditional presentation or reports. It is commonly used for email marketing, educational purposes, and social media ads.

Online creative content also covers art, literature, sound, and writings posted and published on the Internet.

## Communication Platforms

These are best used in achieving better collaboration and connection with anyone across different distances. A communication platform is commonly used by businesses, organizations, and even individuals for a faster exchange of information.

Examples include the following:

- **Microsoft 365** – it is a productivity tool that includes MS Teams, OneDrive cloud storage, and Office apps best for browsing, editing, and storing documents from Microsoft Office.
- **Google Workspace** – it is a web-based tool that assures secured collaboration and productivity apps for businesses. Examples include Gmail, Google Drive, and Google Sheets.
- **Dropbox** – it is a user-friendly cloud-sharing solution for managing shared files, reducing email needs, and improving collaboration between employees.

## Online Safety, Security, and Etiquette

Aside from extensive efforts to abide by the enacted cyber laws, it is still the main responsibility of the user to explore and use cyberspace with heightened safety precautions, security measures, and proper online etiquette.

**Online Safety** is the means wherein users can defend themselves against possible dangers online. Here are some major safety precautions to consider online:

1. **Never trust anyone:** In this social media world, it is easier to make connections with different people. Emotions are often put first instead of critical thinking when it comes to disclosing information online. Never trust anyone online unless extremely necessary. Look for safer alternatives that can avoid recording and saving information that might be used as leverage in the future.

2. **Do not disclose too much information:** People find comfort and joy in sharing everything online through images, videos, and posts. It is advisable to limit posting personal information to not jeopardize the safety and mental health of the user.
3. **Cross-check a website:** Phishing, which is an illegal way of pretending to be a legitimate website, is rampant these days. Make sure the correct link and spelling are observed before doing any communication and transaction online.
4. **Click links accordingly** – As the Internet becomes more widely accessible to everyone, the risks become more subtle and smart. Links can be shortened to hide the full address for convenience but can also be used to contain malware that activates in a single click. It is best advised to never click shortened links unless it comes from a reputable source.

**Online Security** safeguards confidential information against dangerous attacks and cybercrimes. Here are some major security measures to consider online:

1. **Password Security:** Websites require a strong password that meets the usual standard of more than eight (8) alphanumeric characters, additional symbols, and proper caps lock. Aside from not using any personal information such as birthdays, full names, or addresses for passwords, it is advisable to use a password that is easy to remember to avoid constant account locks. Do not use the same password on multiple websites as well to avoid a bigger data breach.
2. **Multi-factor Authentication:** Aside from having strong passwords, authentication using biometrics and PINs are considered more secure now. Apply multi-factor authentication that requires OTP (One-time Password), fingerprints, and facial recognition that sends a notification each time a failed attempt is made.

3. **Installing Anti-virus:** For each time a suspicious link is clicked, an installed anti-virus can provide early detection of possible viruses it may bring. Installing anti-virus programs help clean and maintain the device to avoid data breach as well as system corruption.
4. **Backup Storage:** Files from a computer must be stored in a backup that is either cloud storage or a hard drive. This is a healthy way of securing files and information in case a breach or manipulation happens as it prepares additional copies to replace whichever was lost.

**Online Etiquette** is the idea of behaving with kindness and respect to others who utilize the benefits and advantages of the Internet. Here are some major proper online etiquettes.

1. **Proper use of tone:** No matter whether in written or audio, using the proper tone to get the message across is crucial in a conversation. All caps and excessive exclamation points in a sentence can either mean excitement or anger. It can be difficult for the receiver to respond and can create conflicts. Observe proper use of tone by considering the situation and the setting of the conversation.
2. **Proofreading the message:** The instantaneous benefit of online communication is a double-edged sword that can cause major problems. Rushing a report leading to missing vital information causes a bad reputation and sending a message without proofreading that escalates a situation are just some adverse effects if proofreading is neglected. Read the text and information as necessary as possible and correct any grammatical and spelling errors.
3. **Respect for privacy:** Technical skills can be learned online, especially ways how to hack or snoop on confidential information. Never attempt a forced entry to someone's account or system without their permission. Personal privacy should be respected and should not be used in performing cybercrime.

4. **Be prepared and minimize distractions:** Online meetings, seminars, and lectures are starting to become a norm. It is advisable to be prepared each time before entering any online activity by checking if the camera and mic work and by making sure that distractions are limited such as a busy background and noisy environment.
5. **Avoid misinformation:** With the influx of available information, it is advisable to validate any form of information such as news, articles, infographics, and blogs before sharing them with others. Checking the source and looking for a reputable source that shared the same information is one way to verify information online.

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