

Lesson Tool 5: Social Aspects of Computer Use

After studying this lesson tool, you should:

- Understand the impact of computer technologies on society and on
 - E-commerce and business
 - Our working lives
 - Education
 - Information processing
 - Privacy and security
- Be able to identify the social problems associated with advanced computer technology
- Be able to demonstrate a comprehensive understanding of the impact of social network websites – their advantages and disadvantages
- Be able to define the term “digital divide” and describe its causes and how it can be addressed



- Our world and all aspects of life have become overwhelmed with computer technologies.
- We are empowered by these technologies and they have improved our quality of life.
- Meanwhile, they invade our privacy and widen the gap between the rich and the poor.
- The last chapter of the study guide introduces students to the wider social implications of computer technology.

THE IMPACT OF INFORMATION TECHNOLOGY ON SOCIETY

This chapter will focus on the following aspects:

- E-commerce and business
- Our working lives
- Education
- Information processing
- Problems associated with advanced computer technology

E-commerce and Business

Technology have completely changed the way commercial companies do business and banks function.

- Physical distance no longer puts a restriction on the way businesses are structured.
- Network infrastructure and online availability of services and information have made sales clerks, stock brokers and travel agents redundant.
- The fact that products such as software and music can be ‘shipped’ electronically has reduced the need for distribution and shipping companies
- Reduces costs:
 - No physical store needs to be set up and maintained.
 - Simplification of order placement and execution.
 - Providing 24 hour customer support.
 - Staffing requirements are reduced.
 - A retail business does not need to carry the inventory of a physical store.
 - No restriction on retail hours

Challenges:

- Setting up and maintenance of a store website can be expensive, although spending on the usability and appearance of the site is justifiable.
- Shipping of products can be costly
- E-commerce creates opportunities for fraud and theft – can mean added costs.
- Quite easy to get unlawful access to digital music or movies on the Internet.

□ Our Working Lives

➤ Communication and Groupware

- Technology brought electronic mechanisms for communication such as e-mail and Skype
 - Which allows workers to correspond cheaply and instantly over long distances
- Web 2.0 technology is commonly used by organisations to support collaborative work
- Collaboration through computer technology is historically known as **Computer Supported Cooperative Work (CSCW)**, which is concerned with principles according to which computer technology support communication and group work.

- physical systems through which CSCW manifests are called Groupware

Problems:

- Synchronous and asynchronous systems : It may be difficult for users to know exactly who else is using the system.
 - Synchronous means “at the same time”. Asynchronous means “at different times” or independent.
- Contention: when two or more users want to gain access to a resource that cannot be shared
- Interference : This arises when one user frustrates another by getting in their way.

➤ Access

- Easy access has an impact on the work environment
- Electronic availability of company reports and policies on internal networks
- E-mail - easier for employees at lower levels to communicate with their superiors - managers have become more accessible

➤ Office Hours and Location

- Mobile technology allows people to do their work anywhere, any time and a centralised office may not be important any longer

- Benefits companies -Cut down on office space
- Advantageous to employees who will have more flexible work hours – no need to live closer to work
- Downside- being connected at all times heightens the need for skills such as prioritising, focusing and working without interruption

□ Education

- Unisa students - attest how technology has influenced learning

Eg MyUnisa – possible for students to communicate with their lecturers, access materials, assignments and examinations.

- Vast amount of educational resources available on the Internet.
- Unfortunately: More low quality, unreliable information than there are trustworthy academic sources. (Kids should be taught about it).
- Hot HCI topic: m-learning (mobile learning) -The use of mobile devices to deliver learning. Cell phones are an ideal platform to distribute learning material to students, however, challenge to present learning material on a small screen. Digital divide is another issue and connectivity problems

□ Information Processing

- Supercomputers - process huge amounts of data in relatively short periods of time

- Possible to develop computer models of complex systems, i.e. Climate modelling
- Involves projects such as :
 - Climate system- calculating or predicting weather forecasts
 - Human genome project
 - Without this capacity the aim of establishing a human DNA sequence could not have been reached.
 - Google earth- enables visit to foreign places.

Social advantages of being able to model complex systems include a better:

- Improved the understanding of pandemics, contagion and global health trends.
- Better prediction of the impact of climate change on the environment, the economy and on humans in general.
- Better prediction of natural disasters and their impact so that effective response plans can be set up.

□ Problems associated with the “Information Age”

➤ Privacy and Security Issues

- Public and private sectors – store client's info digitally and info could be freely or easily accessible – not always secure
 - Difference between digital and physical sources of information is that it is far easier to copy and forge digital data.
 - Easy to find information that users do not protect.

- Spam – unsolicited mass mail that is sent to millions of users daily
- Increasing value of the information being stored and transferred across the world's computer networks is also increasing the importance of security
- Most security violations in large organisations come from within and are the result of either malicious actions or carelessness. i.e commercial systems (EFT's, and commercial emails are the threats)
- People have abilities and ways of beating the system
- Malware –Software developed for the sole purpose of doing harm or gaining unlawful access to information, produced by "hackers" or "crackers".

Types of Malware:

- ❖ Trojan horses
 - Malicious piece of code is hidden inside a program that appears to offer other facilities. i.e programs used to access your password.
- ❖ Time bombs
 - Piece of hidden program code designed to run at some time in the future, causing damage to, or loss of, the computer system
 - Planted as a means of retaliation by dismissed employees. Less severe than Trojan

- ❖ Worms
 - Self-replicating programs
 - Slowly grind a system to a halt and all useful work will be squeezed out.
 - Unlike a virus, a worm does not need a host to cause harm.

Assumption- security violations in large organisations come from within due to malicious actions or carelessness.
- Information Overload
 - New information leads to new invention, and contributes to the evolution of humankind – we depended on knowledge
 - Spending large amounts of time searching through and taking in irrelevant or useless information just because it is there – most is incomplete, unsubstantiated and incorrect
 - Access to harmful information such as building dangerous objects, genomes of viruses, political propaganda and violent or pornographic material. NB filtering information skill
- Dependence on Technology
 - Modern society is almost entirely supported by information technology
 - Risk:breakdown of technological infrastructure will lead to serious disruption of economic and social systems

We cannot live without mobile phone technology, credit data systems, electronic money transfer systems, and the like.

SOCIAL NETWORKING TECHNOLOGIES

Types include:

- Chat Rooms
 - Locations on the Internet where people meet to have online conversations in real time – open for anyone to join, discuss specific topics
- Instant Messaging (IM)
 - Real-time communication tool that allows two or more users who are connected to the system to interact with each other synchronously.
 - Sender must know the user name of the recipient to send a message
 - Privacy settings make it possible to block out messages from unknown users or messages from specific individuals
 - E.g. MXit , Whatsapp, BBM, Telegram, Snapchat, FB messenger
- Blogs
 - Online journals
 - Individuals use them as diaries or to comment on specific topics

- Social Networking Sites
 - Web communities or online communities
 - Users create profiles, including photographs- privacy to profile can be limited through settings. Facebook, Twitter, LinkedIn, Instagram...
 - Communication can be synchronous (like “chatting”) or asynchronous (like blogs or e-mails).

Advantages of social networks

- Low cost of creating a web presence
- Making personal connections
- Connecting families (stay far apart or in different countries)
- Making connections for career purposes
- Businesses - additional information on someone before employing them.

Disadvantages of social networks

- Lack of anonymity or privacy
- Identity theft
- Loss of working time
- Mining of users' data for advertising purposes
- Cyberbullying
- Cyberstalking
- Inappropriate content such as political propaganda

THE DIGITAL DIVIDE

- Refers to unequal access to technology that subdivide people into those who have it and those who do not.
- Not only a reflection of separation between developed and developing economies.
- Also exists among population groups within the same nation. Some contributing factors to the digital divide:
 - Financial constraints
 - The lack of skills
 - Unavailability of basic infrastructure (eg electricity)
 - Carelessly designed systems.
 - Literacy levels
 - Lack of cognitive resources

Interacting with computers requires basic skills to:

- Recognise need for information
- Find information
- Process and evaluate information for its appropriateness, and
- Apply it in a meaningful way.

Attempts to Bridge the Divide

Projects include:

- MIT's One Laptop Per Child project (MIT, Accessed 23 Oct 2007)
- Hole-in-the-Wall project in India (Mitra, 2003).
- Digital Doorway Project (Meraka Institute, accessed 23 Oct 2007). Initiative by the Department of Science and Technology and the Meraka Institute of the CSIR.
- Focuses on providing computers in underprivileged communities in South Africa
- Digital Doorways:
 - Non-standard computer systems housed in rugged, custom-designed kiosks with multiple terminals that can be accessed simultaneously by users
 - Robust housing and metal keyboard protect the system against vandalism
- Aim is to promote computer literacy through unassisted learning by installing the computers at schools, police stations and community centres in underprivileged communities.

Conclusion

Many books have been written on social issues in human-computer interaction and the impact of technology on society. So, it is difficult to reduce these topics to a discussion in one lesson tool of a study guide.

The aim was to give you an idea of the profound effects of technological advancement on society.

Chapter only touched on aspects such as privacy and security and did not even mention other important issues such as ethics and intellectual property.

Hopefully this have stirred your interest and that you will, as future designers or IT managers, keep yourself informed of the pervasive impact that computers have on our world.