

Unwrapping the Gift: Benefits of Computer Technology

“Accentuate the positive....”



Ubiquity

- Have you used computer technology today?
 - ATM
 - CD-player
 - cell-phone
 - modern appliances
 - music player (iPod)
- Direct vs. indirect use?



Negative impacts of new technology

- Unemployment
- Alienation
- Poor customer service
- Crime
- Loss of privacy
- Errors



General positive benefits

- Convenience / less effort
- Time / cost savings
- New kinds / classes of jobs
- More options for transactions
- Improvements in crime-fighting
- Improved customer service / satisfaction
- Fewer errors
- New forms of entertainment
- New ways to communicate



Appreciating the Benefits

1. Benefits computers bring to communication.
2. Benefits computers bring to transportation, especially within our communities.
3. Benefits computers bring to education and training as they aid local schools.
4. Benefits of computers in fighting crime.
5. Benefits computers bring to medicine.
6. Benefits computers bring to the disabled in schools and the workplace.



Benefits to communication

- Non-invasive; read at recipients' convenience
- Time-saving
- Access to immense (often timely) amounts of information
- Text, graphics, and sound can be combined
- Much information on the web is “free”
- Public forums not limited to geographic boundaries
 - Traditional boundaries are no obstacle
- More independence - people can do more themselves
- Remote access available



Q

Does email save time?



Benefits to Transportation

- Navigation
- Diagnostics - e.g. chips that collect information about engine behaviour
- Safety - e.g. ABS
- Hybrid engines
- Fuel efficiency
- Traffic pattern studies

Q: How have these benefits aided Victoria?
What might we do better?



Benefits to education

- Language acquisition
- Spelling
- Literacy (e.g. www.starfall.com)
- Distance learning
- Simulations (e.g. for learning air traffic control or endoscopic surgery)
- Speech recognition & synthesis (e.g. for learning a foreign language)



Q

Does a 'computer in every classroom' benefit elementary education?

What about a SmartBoard in every classroom?



Benefits in fighting crime

- Improved crime reporting
(e.g. information about stolen art may be posted)
- Faster search of arrest records and fingerprint files
- Remote access to records and reports (e.g., from patrol cars)
- Enhancement of records (fingerprints and photos)
- Access to numerous databases
- Improved monitoring and surveillance equipment



Benefits to medicine

- Sophisticated medical imaging
- Reduced surgery time
- Faster recovery time (e.g. minimally invasive surgery)
- Patient monitoring
- Improved treatments
- Fewer errors (e.g. robotic pharmacies)

Q: How does your doctor use computers?



Benefits to medicine

- Patient records
 - More legible
 - Better organized
 - Accessible by many sites, simultaneously
 - Available immediately
 - Improved statistical research



Benefits to medicine

- Diagnosis
 - Streamlined diagnosis
 - Improved accuracy
 - Reduced need for biopsy
 - Improved screening and predictions
- Telemedicine
 - Broad access to medical help
 - Less expensive
 - Expands consultations beyond rural/remote sites



Q

How might the military use telemedicine?



Benefits to the disabled

- Disability-specific computer applications (e.g., a braille printer)
- Control of household and workplace appliances
- Mobility
- Control of artificial limbs
- Improved vision (e.g. large font sizes)
- Access to adaptive educational equipment
- Improved communication (e.g. speech input for people who can't write, speech synthesis for those who can't talk)
- Opportunity to return to work



Q

How do computers benefit disabled people at UVic?



Benefits - Automation

- Organize and access large inventories
- Cost-saving
- Time-saving
- Improved customer satisfaction
- Tedious, monotonous work done by machines
- Improved workplace safety

Q: what task would you like replaced by an automated system?



Identifying people and products

E.g. Bar codes & smart cards

- Time-saving
- Accuracy
- Ease-of-use
- Cost-saving
- More secure
- Customizable
- Reliable



Monitoring Environment and Materials

- Temperature
- Acceleration
- Stress in materials
- Emissions
- Dangerous substances in the air
- Moisture
- Acidity



Other Benefits

- Tracking
 - Rare plants and animals
 - Migration habits
 - Stolen goods
 - Lost pets or people
- Reducing Paper Use and Trash
 - Creation of toxic wastes at paper mills also reduced



Q

Have computers reduced paper at UVic?



Summary

- Many and varied benefits
- Not just the result of improved automation
- Some cautionary notes, though:
 - Do improvements for crime fighting affect personal privacy?
 - Is faster necessarily better?
 - How do we identify, articulate, and decide upon the various tradeoffs?
- This is, in essence, the remainder of the course.



Discussion Questions



- How can computer technology make life in a new country easier for immigrants?



- Some high schools require students to turn in their cell phones before class and retrieve them afterwards. Do you think this is a good policy?



- Buying medicines on the web. What is the impact on...
 - Employment?
 - Customer service?
 - Crime?
 - Privacy?
 - Errors?

