Human Computer Interaction Assignment

**Topic: Future Impact of Computer on Society**

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Role of Computers in Learning

**Introduction**

The way in which learning is experienced has begun to change. Technology is impacting education to such an extent that educators and industry-professionals are claiming a revolution is underway. Students are no longer restricted to hierarchical, top-down, traditional learning environments. Increasingly, students are offered an individualised and adaptive form of education that can be accessed anywhere and at any time. This change in the learning experience could not have come at a better time. The new generation of students are increasingly ‘digital natives’ (Prensky, 2001), who view technology as a non-remarkable feature of daily-life. The impact of technology in education is no longer new and exciting; it has become merely a necessity. Yet the idea of a revolution in education is not new, and is seen by some as akin to the story of the boy who cried wolf. In the 1920s, Thomas Edison claimed that television would largely replace textbooks; in the 1930s, Benjamin Darrow predicted that radio would challenge the role of teachers and textbooks; and in 1984, Seymour Papert suggested that computers would become the key tool for education. The importance of Massive Open Online Courses (MOOCs) and Web 2.0 platforms shall be highlighted as technologies that are 9 The Future of E-Ducation: the Impact of Technology and Analytics on the Education Industry promising to revolutionise the infrastructure of education. MOOCs and the Web 2.0 defy the traditional barriers of education and offer it on a decentralised, universally accessible level. This section, consequently, emphasises the importance of digital information literacy in an increasingly online world. The second section of this report covers the revolutionary qualities of mobile and multi-faceted technology. Mobile and multi-faceted technology is revolutionising the way society provides education to students. Cloud computing is one such noteworthy technology. Education is increasingly becoming a fully-customisable experience, shattering its traditional rigidity. The third and final section of this report discusses the potential of virtual learning environments and learning analytics for education. Today’s fully inter-connected and digitalised society has allowed people’s physical lives to merge with their virtual ones. Soon, this will also be true for students. As students increasingly have access to mobile learning devices, learning will occur more frequently via educational games and virtual learning platforms. Students will be able to complete assignments, be corrected, and receive feedback entirely via virtual learning environments. Together, virtual learning environments and learning analytics will solidify the progression of education towards being a more individualised, customised and adaptive system. Despite promising to transform the paradigms of learning and education in a manner that, for the first time, is likely to be achieved, the technologies discussed in this report are not without their complexities. By explaining how and why education is undergoing rapid changes due to technological advancements and societal needs, this report will also highlight the benefits and downfalls of customising the learning experience for each individual. The future of education will be more individualised, adaptive, customised and accessible than ever before.

The advantages of computers in learning primarily include:  
Storage of information  
Quick data processing  
Audio-visual aids in teaching  
Better presentation of information  
Access to the Internet  
Quick communication between students, teachers and parents  
Computer teaching plays a key role in the modern education system. Students find it easier to refer to the Internet than searching for information in fat books. The process of learning has gone beyond learning from prescribed textbooks. Internet is a much larger and easier-to-access storehouse of information. When it comes to storing retrieved information, it is easier done on computers than maintaining hand-written notes.

MOOCs (Massive Open Online Courses) Distance Learning

Emma Boyde from the Financial Times says that the agent provocateur of this revolution in education is the MOOC. MOOCs are free, online courses with open, unlimited enrolment. They provide access to courses being taught by leading scholars and industry experts, and are being offered by the world’s leading universities. The original three universities to offer MOOCs were Harvard, Stanford and the Massachusetts Institute of Technology (MIT). The term MOOC was coined in 2008 as a result of a learning theory course from the University of Manitoba, Canada, which had enrolled 25 tuition paying students and some 2,300 online students who paid no tuition. The first MOOC platform was launched in 2011 by Stanford University. Stanford launched three MOOCs, each of which enrolled about 100,000 students (Pérez-Peña, 2012). MOOCs then exploded across America as, by July 2012, MITx.org, edX.org, Udacity.com and Coursera.org have been launched. As of July 2013, universities from Germany, Australia, Brazil, Turkey, Lithuania, Israel, Italy, India, and France offered MOOCs. Moreover, universities in the UK, Denmark, China, Korea, Japan and Mexico, are planning to launch their own MOOCs by the end of the year. This global explosion has made MOOCs a disruptive technology in education. MOOC providers are offering MOOCs as an alternative to traditional education. MOOCs offer students traditional course materials such as readings, quizzes and problem sets. Students are taught via video lectures, can participate in online discussions and study groups, MOOCs are free, online courses with open, unlimited enrolment. They provide access to courses being taught by leading scholars and industry experts, and are being offered by the world’s leading universities. Although each MOOC platform performs a similar function, they each offer something different. Coursera.org and EdX.org are virtually similar. They both offer courses from globally leading universities in a wide range of topics from humanities and social sciences to medicine and business. They encourage students to learn at their own pace, but to complete courses within a time frame that mimics a traditional university course. Coursera.org and EdX.org offer their students feedback though interactive assessments and discussion platforms. It subsequently allows any student or learner to access the content. Each of these MOOC platforms present and deliver the same products to learners although they are offered in a manner of different ways. MOOCs are revolutionary in offering students free, world-renowned education that can be completed anywhere and at any time. Stanford Professor Ng explains how MOOCs are revolutionary for the way in which they change the economics of education. In particular, they allow “one professor to teach not just one student but 100,000” .

Computers are a brilliant aid in teaching  
Online education has revolutionized the education industry. Computer technology has made the dream of distance learning, a reality. Education is no longer limited to classrooms. It has reached far and wide, thanks to computers. Physically distant locations have come closer due to Internet accessibility. So, even if students and teachers are not in the same premises, they can very well communicate with one another. There are many online educational courses, whereby students are not required to attend classes or be physically present for lectures. They can learn from the comfort of their homes and adjust timings as per their convenience.

Mobile Learning: A new Phenomenon

Devices Mobile learning was redefined with the introduction of smartphones in 2001, mobile applications in 2008 and tablet computers in 2010. By 2013, these mobile learning devices, alongside laptops, have become incredibly capable, useful, and ubiquitous in the developed world. The New Media Consortium 2013 Horizon Report says the distribution of these mobile learning devices “defy traditional patterns of adoption; schools and consumers alike have decided these devices are necessities, even economically disadvantaged families find ways to make use of mobile technology.” As the world is moving online, Web 2.0 platforms and ‘flipped classroom’ models become the norm, it is becoming imperative that students have constant access to mobile computing devices. Mobile learning devices, if implemented in educational institutions correctly, promise to make education individualised, customised and accessible for every student. Mobile learning devices are also increasingly necessary for students and educators alike, if they are to partake in the aforementioned revolution of education. Most young people today have access to some sort of mobile learning device: Although smartphones and tablets can function like e-book readers, the readers are differentiated by their designs that mimic 35 The Future of E-Ducation: the Impact of Technology and Analytics on the Education Industry the qualities of books. They optimise portability by being incredibly light and thin; they avoid the harsh backlight of the aforementioned devices to increase readability in the sun; and they have a much longer battery-life. A single e-reader is capable of holding the digital equivalent of up to 1,400 books (Amazon, 2013). The last mobile learning device, the laptop, has become so popular in every-day society that most households own at least one. The first method is known as the one-to-one initiative. Schools from Australia to Finland are looking to acquire mobile learning devices that can be provided to each student. The initiative aims to provide every student with a laptop or tablet so that they may have independent access to a computer at school and at home. Justin-Siena High School in California will be implementing a one-to-one pilot for the 2013 academic year. Students will receive an iPad and are excited about having to carry fewer traditional learning tools such as notebooks and textbooks (Dills, 2013). Students will also be able to work on the same task, software and hardware anywhere and at any time. The teachers are also excited; they will no longer be confined to reserving computer labs in order to access the Internet for class activities (Dills, 2013). However, despite programs like the Finnish Molla project which aims to introduce kindergarteners to new media on platforms like the iPad, Esa Kohtamäki of the Pori Education Board in Finland highlights, “it’s impossible for us to guarantee a working computer for everyone” (YLE, 2013). Similar impossibilities are arising in other countries where one-to-one initiatives were pioneered.

The contribution of Web 2.0

The Internet has drastically changed how people interact, communicate and present information. New platforms such as Wikis, blogs, podcasts, bookmarks and social media sites including Facebook and Twitter have adapted the original website platform in such a way as to coin the term Web 2.0. Web 2.0 is, therefore, not a new technology: it was coined in 1999 by Darcy DiNucci and merely describes the new ways web pages are being made and used. It is now not uncommon to see Web 2.0 being used by students and teachers alike as tools to support learning. However, this technology is also being used to extend student’s learning environments beyond the classroom (New Media Consortium, 2013). The world is moving online, but until recently this has not been reflected in classrooms or in curriculums across the world.

# Role of Computers in Business Transactions

It does not matter how small a **business** might be, a computer will be essential in that business, computers are used to accomplish different tasks in a business. The use of computers in business has changed the way most businesses operate. Computers will continue to revolutionize the methods by which business operate and manage information. Computers enhance speed and efficiency in a business, they make accurate and unbiased data available to business owners and related parties, and they also help in the flow of information by supporting group / team **decision making** with in a business or organization.

It is important to keep in mind that they do have their limitations and should be used to serve the mission of the business, for a business to take good **advantage** of computers; they have to maintain a human touch – or add it to the process, because computers can’t do anything without getting commands and instructions from humans. This means, that business owners have to hire computer literate employees or train them **how to use computers** to accomplish specific tasks at work.

**ADVANTAGES OF COMPUTERS IN A BUSINESS**

**1. Data Storage:** Many small businesses keep and store important business documents on their computers. Since these computers have big storage hard-drives, they can be in position to store millions of files and the discovery or retrieval of these files is very easy. Data can be stored in specific folders to make it easy to access, and some data can be made private by use of password protected folders. For medium size growing companies, they invest in centralized powerful computers which store all business data, this data can be accessed via an internal or external network within the company. This all process creates efficiency within a business and it also helps in the transfer of data and information from one department to another.

**2.**  **Education:** Many companies use computers as a training tool at work. Due the increased advancement in technology and business trends, it is very important for a business to train their employees’ new skills. So for a business to save money in this process of training employees, computers can be used to educate and update their employees. However, to save time, business owners or human resource managers can use virtual technologies to communicate and train their staff; this means that employees will stay in their departments and on their desks as they attend a lesson. Virtual communication software like **skype** can be used to train employees virtually, all you have to do is to create a **group** and add all your employees in that group, so you will talk to them at once and they can also ask you questions via their computers.

**3. Research:** It is very difficult for a business to survive in today’s competitive business world. For any business to succeed and gain a certain degree of competitive advantage in any market, they have to carry out extensive research about that target market and their competitors. It is very important to know what your competitors are doing, this information can help you strategize your business and look unique in the eyes of the consumer. A computer can be used to make business research on the internet; the power of the internet is immeasurable, because search engines like **Google** will give you insights in each and every market and company. Online analytical companies like **Compete.com** will help you measure your competitors’ strength online and this will help you make wise business decision basing on facts and figures.

**4. Accounting:** Since accounts deals with facts and figures, it is very essential to use a computer during the accounting process, this reduces on human errors and it also helps business owners keep track of their businesses without any need of learning accounting basics. Computers make accounting look too simple, so any one can use programs like QuickBooks to balance and track inventory. Mobile computers like tablets and notebooks can be used to access accounting data remotely. Online QuickBooks software from companies like **intuit.com** can automate the invoicing process, billing and reporting which creates efficiency in a business.

**5. Marketing:** A business can use a computer to create a business website. Today, it is very easy to create a website, if your budget is limited and you can’t afford a website designer, all you have to do is to pay for cheap hosting of around **$4 per month**, register your companies domain name for only $10 per year, then install Word Press on your domain. To create a beautiful company website, go to **Themeforest.com** and buy a business Word Press theme for only $45 then install that theme on your default Word Press site, then start editing the theme to fit your company goals, the all process is simple and cheap. You can use your website to market your services and products, reach more customers by integrating your website content with social media sites like facebook and twitter.

**6. Transfer of information:** Computers can be used to transfer information within an organization / business. In this lesson we have already seen that a computer can

be used to store data, so this data can be moved across the company using a computer. Information can easily move from one level to another using an internal network or external network. An internal network ensures that information is only shared within the company, so an infrastructure to move this data is created so that employees and business managers share data using their computers. Yet for an external network, users will be in position to access data stored on company database using the internet, in most cases, companies set up websites which require users to login to access this data.

**7. Communication:** One of the key factors which drive a business is communication. Computers can be used to accelerate the communication process within a business. It is very important to stay in touch with your customers and listen to their needs and demands, many small businesses are using electronic mail as a communication media to reach their customers and business partners. Also computers can be used in virtual communication, in this process both parties need to install a virtual communication software like Skype on their computers and start communication through video, small businesses can create group chat rooms on Skype for free, this will help them stay in touch with each other from anywhere.

**8. Office and Supply Management:** On a daily basis, businesses deal with buying and selling of goods and services, a computer can be used to manage supplies and inventory efficiently. Companies like **Intacct.com** will provide you with a cloud based inventory management software which will enable you gain control and visibility into inventory from anywhere using a computer. This all process will help you maximize cost savings and also improve on capital efficiencies. You can as well use a computer to manage and track basic supplies in a business, these supplies can include papers, printer-ink, and other small supplies used on a daily basis in a business.

**DISADVANTAGES OF COMPUTERS IN A BUSINESS:**

**1. Requires Training:**  In most cases, small business owners don’t know how to use a computer for business purposes, so they have to hire experts to teach them and their employees on how to use computers to accomplish specific business tasks. To some extent, this process is costly and it takes time. For example, if a small business owner wants to use QuickBooks to manage their accounts, they have to take off time and learn how QuickBooks works, or they will have to pay an extra fee to hire a QuickBooks expert to teach them. Even though the end result is good, time and money will be spent during this process.

**2. Computer Crime:** Computers are used to provide efficient ways for employees to share information, but at the same time employees with malicious intentions can use this opportunity to hack into the system to access private business information for their personal gains. In most cases this information can be sold to business rivals, which is harmful to a business. Computer crime is on the rise and many small businesses have been victims of data loss. Sometimes employees or outsiders can modify computer programs to create false information or illegal transactions or install viruses to corrupt stored information.

**3. Require Additional Infrastructure:** Integrating computers in a business can be costly, you don’t stop at buying a computer, you need to invest money in different types of business software, this software is used to accomplish specific business tasks like accounting, tracking inventory, sales, data security and so much more. You also have to invest money in computer maintenance contracts with Geek experts who will service your computers every month to ensure that they operate efficiently. This all process can be costly and some small businesses can’t afford them.

**4. Replaces Human Labour**: If a business decides to use computers to complete most difficult tasks, humans will not be much needed and this will cause job loss and unemployment. Let us take a simple example in a Bakery business, electronic temperature sensors can be used to control and report room temperature in the baking room, in this case, the bakery will need only one person to monitor results on the computer from the baking room, if the temperature drops or rises, notifications will be sent to the computer and the controller will respond immediately. This is a good technology for a business, because it will guarantee efficiency and quality, but it will also cut off so many people.

A cashless society would mean, of course, the absence of currency and coin. Therefore, a cashless society could mean a barter society in which commodities were traded for commodities.

**The EFTS**

As it became apparent that electronic banking was here to stay, Congress in 1974 established the National Commission on Electronic Fund Transfers. The commission studied the infant EFTS, and published its recommendations in 1977. The commission concluded that an EFTS developed in an “orderly” manner would be beneficial to consumers of financial services and suggested that such a system operate outside the public sector. The commission went on to state that “a national EFTS could be supported by as few as 225,000 on-line terminals installed in general merchandise stores.”As the commission completed its research, the Federal Reserve established “Fed Wire.” Fed Wire is a nationwide electronic communications network that links the 12 Federal Reserve District Banks, all member commercial banks, and the U.S. Treasury. It represents a considerable investment on the part of the Federal Reserve, and has been interpreted by the member banks as Federal Reserve endorsement of a nationwide EFTS. Transition to an EFTS involves overcoming structural barriers such as high start-up costs as well as the establishment of cooperation and communication among competing banks and retailers. In a sense, by the creation of Fed Wire, the Federal Reserve has provided not only an endorsement of EFTS, but a subsidy as well. Large institutions have capitalized on the Fed’s investment, and smaller organizations must now subscribe to the changes in order to remain competitive.

**ATMs**

Keeley uses such facts to support his view that a cashless society is “far from reality.” However, a provocative argument can be made that the transition to a cashless society involves an *increase* in cash usage prior to its disappearance for all but low-dollar and “discrete” transactions. Before the spread of ATMs, a greater percentage of retail transactions involved payment by check. Because of processing delays, checks present opportunities for buyers to make purchases prior to the receipt of the requisite funds in their accounts—i.e., there is a so-called “float.” However, checks also involve a certain amount of time and inconvenience for the parties to a transaction. Before the spread of ATMs the most common method of obtaining cash was from tellers at bank branches. With the limited banking hours of the day and the associated long lines, it was far more common for consumers to endure the inconveniences associated with check writing than to visit a bank branch to obtain cash. ATMs made cash easier to obtain, however, and it increasingly became the preferred method of payment.

**Transition Problems**

The transition to a fully electronic transfer of funds system will not be impeded by households; through the use of debit cards they are already in the process of becoming comfortable with the advantages of EFTS. Rather, some of the parties engaging in high dollar transactions will provide resistance until the issue of float costs and benefits is resolved. Insofar as there are delays in processing checks, there is a float cost to the businesses getting paid. This cost is equivalent to a working capital expense for receivables. There is a corresponding benefit to payees who can continue earning interest until their checking accounts are finally debited. Elimination of this float would result in a significant redistribution of income among businesses, and this may explain some of the present resistance to EFTS conversion. The amount of interest earned via check float is now estimated to be between 40 and 50 billion dollars annually. Understandably, the recipients of this interest will resist its disappearance. Canada has addressed the float issue by way of a banking industry and central bank accord that provides for same-day accounting of checks presented for payment. The float has been significantly reduced by the implementation of a retroactive interbank settlement process. This innovation has removed the float associated with the check clearing process, but not that which occurs when a payee holds a check for a period of time before processing it.In order for the U.S. to overcome the barriers to an EFTS created by the float, it appears that voluntary conversion on the part of businesses, rather than regulation, is the answer. The U.S. Treasury has already reduced check use and shifted many government payments to electronic transfer. Among these are Social Security, federal payroll, and even large federal contract payments. It can be expected that the spread of electronic transfer practices will continue in the private sector as well, with the loss of float costs and benefits being considered in the terms on which parties are willing to do business with another.

**Free Banking**

The progress toward an EFTS could further complicate the Federal Reserve’s attempts to manage the U.S. money supply. As economists are well aware, the public’s demand for cash influences the quantity of money in circulation. Perhaps more serious is the internationalization of money flows and the proliferation of new types of accounts. With electronic systems shifting funds from one type of account to another, and from one country to another, it has become difficult or perhaps impossible to say what “the” money supply is. Part of the appeal of free banking is that it makes such issues moot. Financial institutions and customers could pursue their interests independently with their actions being coordinated by the invisible hand of the market. A cashless society would pose no special problems in this context. The 12 Federal Reserve District Banks could be privatized in the form of Automated Clearing Houses; the district bank stock to which member banks subscribe upon joining the Federal Reserve System could be converted into transferable shares in the ACHs. The newly privatized ACHs would presumably play a major role in interbank lending and reserve settlements. In the case of either a gold-based or paper-dollar-based free banking system, base money could be kept at the ACHs, but it need not be. As long as all claims and settlements were continuously recorded, base money would only have to be available at ACHs or member banks to meet occasional customer requests. In conclusion, the movement toward a cashless society is proceeding incrementally. Cash may continue to be useful for some time, especially for discrete transactions, but even these may become increasingly automated. Given the rapid growth in technology (e.g., pocket-sized cellular telephones), it is not difficult to imagine devices whereby even the most informal purchases could be automatically debited from the buyer’s bank account. EFTS is likely to have a profound and visible impact on everyday decision-making. Some of the more obvious benefits are reductions in financial transaction time and cost, and a reduced need for cash which would, in turn, decrease the amount of interest forgone. The opposition to a cashless society is likely to become increasingly silent as it is defeated by subtle economic pressures exerted by the federal government and financial industry giants; they continue to realize the benefits of the transition to an EFT system. As this transition continues, the issue of float is likely to fade as well. While we may not see a completely cashless society in the immediate future, the foundation has been laid, and the available evidence indicates that we are indeed moving in that direction.