Outline:

Use selected on-line articles to explore current issues related to crypto currencies such as BitCoin. A focus for learning is: the underlying technologies, impacts on society, and impacts on the environment.

Objectives:

* C1.4 describe how electronic access to information influences our everyday lives.
* C2.1 describe the negative effects of computers and computer use on the environment.
* C3.1 describe legal and ethical issues related to the use of computers.

**BitCoin & Crypto currencies**

Use the following resource to answer the questions below:

* <https://www.investopedia.com/tech/most-important-cryptocurrencies-other-than-bitcoin/>

1. What is a “crypto currency” and how are “crypto currencies” different from traditional currencies (money)?

A cryptocurrency is a virtual kind of currency in the system of digital money or ‘tokens’, representing high values.

1. BitCoin is the leading crypto currency that most people know. What are some other crypto currencies and what are their unique features?

A few other crypto currencies include Lite coin, Ethereum, and Zcash. Lite coin includes faster block generation, which leads to faster block confirmation, Ethereum has a decentralized software system giving it distributed applications and can be built and executed without interruptions from third party systems. Zcash is far more preferable in terms of security as it offers utmost security and privacy and has a selection of transparency transactions.

**Block Chains Explained**

Use the following resource to answer the questions below:

* <https://www.investopedia.com/terms/b/blockchain.asp>

1. “Block chains” are the basic technology behind crypto currencies and other emerging technologies. Explain block chains work with respect to:
   1. What they store

Block chains store transactions, these transactions include the date, time, and value of your transactions with another user on the server, these users can be companies, and organizations alike.

* 1. How they work

The chain first stores the information of both users and takes their digital signatures and stores them in a block, therefore the transaction is saved and is accessible by the public when released.

* 1. How they are secure and private

These transactions will be secure and private since the block does not take a hold of your username, another evident method of security is displayed with the height of the blocks, or perhaps the number of blocks you can have, if a hacker ever wanted to alter your transactions, the change would cause the hash of the block to inevitably change, and in order to hide their tracks, they would have to change the next block, and so on and on.

* 1. How they use public and private encryption keys

Public and private keys work in a way where the public key is open and is similar to a mailbox, anyone may send messages to it, however the only method to open the mailbox and receive the messages is by possessing the private key, therefore holding the private key allows access to the mailbox, or combination to open the mailbox.

1. How does BitCoin use block chains?

Bitcoin utilizes block chains in a way of verification of records as well as transaction records, however this job is left to a measly five million computers.

1. What are some advantages and disadvantages of block chains?

The first main advantage is the fact that the altering of block chains is extremely difficult in the case of a hacker which makes the bitcoin very secure, which gives it an advantage over others. Another advantage can be its decentralization which theoretically makes the transactions much more difficult to tap, and finally transactions are secure, private, and run with efficacy and with transparent technology. The cons include its low transaction rate (per second), its upkeep cost, and its susceptibility to being hacked.

**Crypto-Games & Other Applications**

Use the following resource to answer the questions below:

* <https://egamers.io/beginners-guide-to-crypto-games/>

1. What are some interesting Crypto Games (i.e. games that use Block Chain technology) available for Android or iPhone?

Crypto bytes, Crypto Idle Miner, and My Crypto Heroes are some of the Crypto games that are available on the android and iPhones, these games use the system of block chain technology.

1. How are Crypto Games different from conventional games?

Crypto games are different from conventional games since they use a crypto system in order for users to earn crypto while they play, this crypto is a currency and is interchangeable between other games, these games are also decentralized. This means that the game system or running servers and the authority was not set. This eradicates the idea of a transaction fee.

1. What are some other real-world applications of block chains besides games and crypto currencies?

Some other applications include the ability to run web 3 applications, also known as dapps this is a kind of cryptocurrency wallet. Other cryptocurrency wallets include Tron Link, and the Enjin wallets.

**BitCoin & Society**

Read the following resources before answering the questions below:

* <https://www.cnet.com/how-to/what-is-bitcoin/>
* <https://www.independent.co.uk/life-style/gadgets-and-tech/news/bitcoin-price-fall-criminals-blockchain-anonymous-cryptocurrency-zcash-monero-dash-a8174716.html>
* <https://coincenter.org/link/why-ransomware-criminals-use-bitcoin-and-why-that-could-be-their-undoing>

1. How is BitCoin created and what is "BitCoin Mining"?

Bitcoin was created by an individual or group with someone who called himself Satoshi Nakamoto, and passed on the service codes to the Bitcoin community in 2011. In order to mine bitcoin, one needs a powerful computer to calculate sophisticated math problems and record-keeping. These computers take transactions and their blocks and turn them into hashes. However, only the best producer of the hashes earns the bitcoin.

1. Can you buy BitCoin and what does it cost?

Yes, you can buy Bitcoin, but as of now, Bitcoin costs approximately $11 250 in Canadian.

1. What can you use BitCoin for?

Bitcoin can be used to send large transactions and very securely.

1. What are the risks of using BitCoin?

The risks of Bitcoin lie in the chances in its investment, since the value of bitcoin highly fluctuates, investment may mean the value changing dramatically in a matter of hours into a deficient which cause investment highly risky.

1. How much of BitCoin business is related to criminal activity?

Bitcoin’s involvement in illegal activity has been severely abused, since in a recent study, almost half of all bitcoin transactions have been illegal. The dark web is also known sometimes to use the currency for illicit items.

1. What are some of the reasons why criminals use BitCoin?

The biggest reason is that the Bitcoin is very secure – however it is still trackable.

1. What are some of the disadvantages of BitCoin when used for criminal activity?

The Bitcoin transactions are not completely anonymous, the transaction records are all public and traceable.

**BitCoin & The Environment**

Read the following resources before answering the questions below:

* <https://www.cbc.ca/news/business/bitcoin-electricity-1.4668768>
* <https://www.cbc.ca/news/business/hut8-medicine-hat-bitcoin-mining-1.4834027>

1. What is a BitCoin “miner” and why are people concerned about BitCoin mining?

Bitcoin miners are the people who own the powerful computers that run and record the transactions, people are concerned with this since the transactions take a drastic amount of energy.

1. Why does BitCoin mining use so much energy?

Bitcoin miners use such a high amount of energy that they use more energy than many provinces in Canada, Czech Republic, and Ireland! This is because the computational power is so great and the mathematical processes are so complicated, these computers use up to 2.5 gigawatts of power.

1. Why has Hut-8 decided to locate its facility in Alberta when its head office is in Toronto? What does the city of Medicine Hat provide that is required for mining BitCoin?

Hut 8 provides the city of Medicine Hat with a burst of economic output, and since the Toronto office is more accessible, the cost of having the site in Toronto would be far too expensive, therefore it was made on a cheaper site, and where environmental laws were less dense.

1. What benefits does the city of Medicine Hat expect to see from this BitCoin facility?

Medicine Hat provides a huge economic opportunity, as it can produce large sums of money a day. It mines an average of 20 Bitcoins every day, each sold for $9000.

1. What concern does the city of Medicine Hat have about from this Bitcoin facility?

The biggest concern is the tremendously large consumption of energy from the facility. This large energy is not reliable from renewable sources; therefore, a gas power plant was made to uphold the facility’s demand. The epicenter of denial is in the large amount of pollution the gas plant will create.

1. What concern do environmentalists have about the Medicine Hat facility and about BitCoin mining in general? E.g. how does BitCoin mining harm the environment?

As said before, the environmentalists have concerns of the facility relying on the non-renewable gas plant, and since it releases a large amount of emissions, the gas plant is not wanted in the city of Medicine Hat.

1. If Hut-8 wanted to build a facility in Brampton, would you be in favor of this proposal? Explain why and why not.

Really due to the large amount of emissions generated, and the increasing need for electricity generation, I feel the city of Brampton wouldn’t want a non-renewable plant here, although it can help the city economically, it produces large quantities of carbon emissions. Therefore, my opinion does not support the idea of a Hut 8 facility in Brampton.