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)?

Cryptocurrency is virtual money that involves complicated cryptography which allows the money to be generated, stored, and transferred safely and mostly anonymously.

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

LiteCoin (LTC)

* Faster block generation
* Faster transaction confirmation

Dash (DASH)

* More secure
* Harder to trace transactions

Ripple (XRP)

* Doesn’t require mining
* Reduces usage of computing power

**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 information about your transactions with a date and time stamp, amount of money, and any other parties involved with the transaction.

* 1. How they work

Once a transaction is made, it needs to be verified so a network of computers checks to make sure the transaction happened the way you said it did. They confirm the date/time, amount and parties involved. Once its verified yours and the recipients/sender’s digital signatures and the amount is stored in a block, when its given a unique, identifying code called a “hash” it’s added to the block chain.

* 1. How they are secure and private

Since there are a lot of accounts, someone trying to break in would have to infect the whole blockchain, which makes it a lot harder. Personal information is not displayed and is hard to find. It is almost impossible to change a block once it’s added to the chain because you would have to change the hash and the rest of the blocks.

* 1. How they use public and private encryption keys

Private encryption keys are used as combinations and only the people who have he combination can access the stuff. The entire block chain is shared and maintained by a group of users and the program makes sure that there are no duplicate blocks, by deleting the shortest block that copies another.

1. How does BitCoin use block chains?

Whenever there is a transaction using bitcoins, a network of computers solve a hash to verify the transaction. When people help with this process they are rewarded bitcoin which allows bitcoin to be free and not controlled by anyone.

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

Pros                                                 Cons

* Improvement in accuracy     - Large cost of technology
* Cost reduction           - Slower transaction speed
* Secure and Private           - Used for criminal activities
* Easy to understand           - Can be hacked into

**Crypto-Games & Other Applications**

Use the following resource to answer the questions below:

* <https://egamers.io/beginners-guide-to-crypto-games/>
* What are some interesting Crypto Games (i.e. games that use Block Chain technology) available for Android or iPhone?
* Casa Tookan Wallet
* Trust Wallet
* Guild Chat Wallet

1. How are Crypto Games different from conventional games?

Crypto games use block chain technology and you can earn crypto currency with them.

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

* Wills/ inheritances
* Health care
* Digital voting

**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"?

A group of people who wanted to create electronic currencies made Bitcoin and bitcoin is mined by solving math problems and algorithms.

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

You can earn Bitcoin through the stock market. Then you would make an account on a certain base and move the money by linking it to your bank account.

1. What can you use BitCoin for?

You can buy products or sell them for money.

1. What are the risks of using BitCoin?

Bitcoin value can drastically drop at any time and you could lose money. You could also get scammed while buying bitcoins.

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

It is estimated that around 44% of the transactions on Bitcoin are used or related to illegal activity.

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

People can conceal their identity and the money is safely stored.

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

Transactions are stored and can be traced to the point of origin or location of device.

**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 mining is the process of solving complex math problems using computer coding and processing power. People are concerned because it uses too much energy.

1. Why does BitCoin mining use so much energy?

Since there are so many computers working at solving problems ant they solve around 26 quintillion hashes every second.

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?

They chose Albeta because it could provide them with the gas-fired generation they needed.

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

Since they are supplying Hut-8 with a lot of resources they should expect to see a boost in their economy.

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

There is a big environmental concern, safety of the people and chances of a power outage.

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

The facility needs a lot of energy which will require the use of a lot fossil fuels and electricity, which’ll cause harm to the environment.

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

Brampton would not be in favor of this proposal because the large population and facility combined would demand a lot of energy which would overwhelm the city. All of this would lead to higher taxes, lack of suppliers and higher chance of a blackout.