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)?

Cryptocurrencies are virtual/digital money which uses the form of tokens or coins. Cryptocurrencies are different from everyday currencies because they are almost strictly electronic; intangible. They cannot be used like regular cash either.

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

**Litecoin**. it has a faster block generation rate, which offers a faster transaction confirmation.

**Ethereum**, enables Smart Contracts and Distributed Applications (DApps) to be made and run without downtime, control, fraud or interference from third parties.

**Ripple,** allows banks to settle cross-borders payments in exact time, with end-to-end transparency and at lower expenses.

**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

Blocks keep info about transactions such as the date, time and dollar amount of the most recent purchase from an online store. They store info about who is part of transactions. Blocks also store info that differentiates them from other blocks.

* 1. How they work

 After a purchase, you need to verify the purchase by adding in the dollar amount, time, and participants. Then, thousands of computers ensure that all the information you have inserted is correct within a second. After this, the info is stored in a block so the transaction goes through, and it joins thousands of other purchases. Then, the block is given a HAS (a unique code) and it is added to the block chain.

* 1. How they are secure and private

Because the large amount of accounts, a hacker would need to infest the whole block chain and not just one, making it much harder to break into. It’s difficult to obtain personal information and it is not displayed. Also, one a block is added to the chain, it is next to impossible to change or delete since one would have to change the hash and every other block as well.

* 1. How they use public and private encryption keys

 Private encryption keys are used as locker combinations where only the person who knows the combination can access the goods. The entire block chain is shared and maintained by a group of users and when the chain is updated, so is theirs. Also, the program will ensure that block chain does not have any duplicate blocks by deleting the shortest block that copies another.

1. How does BitCoin use block chains?

When one person pays another for goods using a bitcoin, computers on the bitcoin network quickly verify the transaction.

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

Advantages:

Secure, safe and private

Improved accuracy by removing human involvement

Cost reductions

Disadvantages:

Low transactions per second

Can be hacked/breached

Very expensive to mine bitcoins/pricy tech needed

**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?
2. How are Crypto Games different from conventional games?
3. What are some other real-world applications of block chains besides games and crypto currencies?

**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"?
2. Can you buy BitCoin and what does it cost?
3. What can you use BitCoin for?
4. What are the risks of using BitCoin?
5. How much of BitCoin business is related to criminal activity?
6. What are some of the reasons why criminals use BitCoin?
7. What are some of the disadvantages of BitCoin when used for criminal activity?

**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?
2. Why does BitCoin mining use so much energy?
3. 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?
4. What benefits does the city of Medicine Hat expect to see from this BitCoin facility?
5. What concern does the city of Medicine Hat have about from this Bitcoin facility?
6. 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?
7. If Hut-8 wanted to build a facility in Brampton, would be in favor of this proposal? Explain why and why not.