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)?

It is virtual currency (money) that on cannot hold and looks like “coins”. It is different as it cannot be found in real life, cannot be used to pay at man stores, and can be found in the stock market.

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

Litecoin is one of the first crypto currencies that has a fast block generation, and it is not controlled by any authoritative figure, similar to any other form of crypto currency. Ethereum allows smart contracts and distributed applications to be created without any fraud, control, downtime, or interface.

**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

They store information about your recent transactions such as the time, date, and dollar amount. They also store information about the other parties involved in the transaction.

* 1. How they work

After you make 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 information is stored in a block so that 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

 Due to the large amount of accounts, a hacker would need to infect the whole block chain and not just the one, making that much harder to break into. It is hard 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 pays with bitcoin, thousands of computers to verify the transaction by solving a hash. People also help this process along and they are rewarded with bitcoin as well. It allows the currency to be its own thing and it does not have to be controlled or managed 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/>

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?

One difference is that they use block chain technology with crypto currency. One can also earn crypto currency through various activities in the game and they are limited to mobile devices.

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

Tracking a package

Retailing

Banks

**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>

How is BitCoin created and what is "BitCoin Mining"?  
Bitcoin was created by a group who wanted to create an electronic currency and it is mined by solving and inscribing math problems.

Can you buy BitCoin and what does it cost?  
You can buy bitcoin by investing in it through the stock market. Then, you can create an account on a certain base and linking your bank account to it to move the goods.

What can you use BitCoin for?  
You can use bitcoin to buy products from many merchants, or sell it for money.

What are the risks of using BitCoin?  
The value of the Bitcoin can drop dramatically at any time and you could lose your money. You can never be certain who you are buying bitcoin from and you can be scammed.

How much of BitCoin business is related to criminal activity?  
44% of bitcoin transactions has been used for illegal actives as people use them for scams, drug deals and a general payment method.

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

It allows people to conceal their identity, it allows criminals to store their money safely, it will not raise suspicion.

1. What are some of the disadvantages of BitCoin when used for criminal activity?  
   Every transaction is stored; it can be tracked back to the point of origin or location of the 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>

What is a BitCoin “miner” and why are people concerned about BitCoin mining?  
It is the processes of solving complex math problems by using computer-processing power and people are concerned because they use a lot of energy.

Why does BitCoin mining use so much energy?  
It uses a lot of energy since it has so many computers at work and they are working to solve  26 quintillion hashes every second.

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 choose to go to this place because they needed gas-fired generation, and Alberta could easily provide them with that.

What benefits does the city of Medicine Hat expect to see from this BitCoin facility?  
Medicine hat expects to see a boost in their economic status through supplying Hut-8 with their desired resources.

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

Medicine hat worries about the environmental effects, the safety of the people, and the likelihood of a power outage.

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?  
Bitcoin mining could hurt the environment because they need a lot of electricity and this facility is using a lot of fossil fuels for their computer’s large need of energy.

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

This company would not be able to host a facility in Brampton due to its large population. This will lead to the city being overwhelmed as the city is demanding a large amount of energy, the taxes will sky rocket, the city would need more suppliers, and there would be a higher chance of a blackout.