

Teacher Lesson Plan Guide

Chapter #1

Why Do We Need Money?

Teacher Guide

Objectives

- Introduce ourselves in a good way by letting our students know that we are open to any questions or doubts they may have.
- Discuss with our students why we need money.
- Carry out the activities corresponding to this chapter.

Materials/Resources to be used

- A computer to share visual material.
- Examples that are relevant to real life, taking into account the chapter's questions.

CLASS OUTLINE AND ACTIVITIES

CLASS DURATION: 90 MIN

- **1.0 Introduction (10 min)**
 - Introduce the chapter to your students, emphasizing the importance of money in our daily lives.
 - Include the questions found at the end of the paragraph.
- **1.1 Meet Satoshi (5 min)**
 - Inform the students that throughout the course, we will have the assistance of Satoshi, who is an interactive helper.
 - Explain that wherever they see Satoshi's image, they can find information or concepts they may not understand.
- **Activity - 5 questions about money (35 min)**
 - Use real-life examples to start the activity of asking questions.
 - At the beginning of the subtopic, encourage your students to make a small list of the 5 essential reasons for needing money.
- **1.1 Class Discussion: Why Do We Need Money? (30 min)**
 - Organize your students into groups of five.
 - Write down the outstanding answers from your students and vote to choose the top 5 favorites.

EVALUATION FOR THIS CHAPTER (10 min)

- Take attendance and create the list of the students attending the course to verify their attendance for each class from 1 to 10.
- Pay attention and start keeping a record of the students who participate the most in class, ask questions, and generally excel positively.
- Other assessments to check for student understanding of the material will be done ahead in other chapters of the diploma. You should make your students aware of this during this first session to set appropriate expectations so they are prepared to do well in future sessions.

Chapter #2

What is Money?

Teacher Guide

Objectives

- Achieve that your students can reason about the importance of money and why it is important using the related questions in the chapter.
- Define what is money and what its main functions and properties should be.
- Analyze with your students the importance of money properties for it to be good money.
- Make clear the importance of having a low time preference, as well as opportunity cost, scarcity, and types of money.
- Carry out the chapter activities.

Materials/Resources to be used

- A computer to share/show material related to the chapter.
- Monopoly bills or counterfeit bills of the country's currency where the diploma will be taught for the first activity.
- Candies or chocolates are to be used at the beginning and end of the class.

CLASS OUTLINE AND ACTIVITIES

CLASS DURATION: 90 MIN

- **2.0 Introduction (5 min)**
 - Start the class with the question "What is money?", this will help your students start giving their opinions according to their own concepts, and this will also help you identify the class focus according to the audience.
- **Activity - Class Discussion: "What is Money?" (20 min)**
 - Start the activity by giving a candy to each of your students.
 - Ask if they would be willing to exchange/sell their candy for a monopoly bill, yes, not, why? Or, for a dollar bill.
 - Make them reason why they would exchange that candy for a bill with "value".
 - Ask questions under this subtopic and encourage student participation.
- **2.1 Definition of Money (10 min)**
 - Teach your students that, although money can take endless forms and can be issued by powerful entities, money is like a language that anyone can use as a medium of exchange.
- **2.2 Money Functions (10 min)**
 - The functions of money are important, explaining the importance of the function of money as a store of value which is a function that many people do not know as this will help them relate the term to some properties of money and also to time preference.
 - Carry out the analysis of the questions asked at the end of the subtopic to identify if your students have understood the concepts.

- **2.3 Money Properties (15 min)**

- Analyze each of the properties with your students.
- After analyzing the concepts of each property together with your students, fill in the table shown in the chapter. To fill it out, follow the instructions.
- Make use of the questions posed for the table.
- Emphasize the importance of scarcity as a property of money, as it is linked to the function of money as a store of value.

- **2.4 Types of Money (10 min)**

- To explain the types of money, use visual material like the one shown in the book to reinforce the concept of each.
- Since digital transactions dominate nowadays, it is important to mention concepts like CBDCs, starcoins, and cryptocurrencies. Read the concepts of each to explain the differences between these forms of money to your students.

- **2.5 Psychology of Money: Scarcity, Time Preference, and Compensations (10 min)**

- To start this subtopic, begin with the example mentioned in the chapter, focusing on the relationship between scarcity and the value of something, and likewise, this affects money.
- Emphasize the terms of the two types of scarcity.
- Afterward, explain the term time preference.

- **Activity - Time Preference (10 min)**

- This activity should be explained from the **beginning of the class**.
- Since we use candies in the first activity, we can explain this activity before carrying out the first activity.
- You should focus your students on the importance of having low time preference, and this happens not only with candies but also in the way we manage our finances.

EVALUATION

- Take attendance of your students.
- Identify and assist students who have doubts about some concepts such as:
 - Time preference.
 - Functions and Properties of money and how to differentiate between.
 - How to identify digital and electronic currencies, etc.
- Additionally, these are some questions that you can ask the students to check their own understanding:
 - What is money?
 - Name the 3 functions of money.
 - Name the properties of money.
 - What are the types of money throughout history?
 - What do we mean when we talk about “the opportunity cost”?

Chapter #3

The History of Money

Teacher Guide

Objectives

- Teach your students the evolution of money over time, from bartering to the digital money era today:
 - Problems with early forms of money
 - Development of coinage and paper currency
 - The transition from Sound Money to Unsound Money
 - From paper to plastic
- Show how money has faced challenges and changes over time, causing money to no longer be backed by anything.
- Conduct the classroom activity.

Materials/Resources to be used

- Paper cutted into small rectangles for the bartering activity.
- Macaroni or similar material to use in the second part of the activity.
- A computer to share visual material via a screen if classroom circumstances allow.

CLASS OUTLINE AND ACTIVITIES

CLASS DURATION: 90 MIN

- **3.0 Introduction (10 min)**
 - Introduce the class by showing your students that money has always been present in our lives even when we were children, as children, for example, always used a good to exchange for another good that was desired at that time.
 - If there are examples within your community or country, use them to make the class more understandable and thus relate more to your students' reality.
- **Activity - Bartering Game (30 min)**
 - Follow the instructions for the activity
 - Since the activity is extensive, it is recommended to select a group of 5 to 8 students to carry out the activity.
 - After the exchanges/trades, analyze the activity using the questions found below each round of the activity
 - For the second round, it is recommended to give each student a macaroni, but you can also give different amounts to students to make the activity more interesting and entertaining.
- **3.1 Evolution from barter to modern currency**
 - **3.1.1 Issues with early forms of money (10 min)**
 - Teach how money began and what this way of exchanging goods consists of, emphasizing the problem this form of money faced with the double coincidence of wants, which will help reason why that form of money ceased to be frequently used.
 - Use images and examples from the subtopic to strengthen your arguments.

- **3.1.2 Development of coinage and paper currency (10 min)**
 - Refer to the activities done at the beginning of the class to focus on the transition from barter to commodity money, highlighting how we moved from exchanging goods for goods to using a medium of exchange to obtain things we need.
 - Explain why metallic currency was sought as a solution to represent money and what its deficiencies are.
- **3.1.3 Transition from Sound Money to Unsound Money (10 min)**
 - In this subtopic, it is important to emphasize how banks were born and the game and incentives they still have today.
 - It is important to make it clear that, although the gold standard existed, it ceased to exist and therefore money is no longer backed.
 - Bretton Woods Agreement - see **Extra Material below**.
 - It is important to emphasize this subtopic since, from this point in the history of money, there begins to be a negative impact on society.
- **3.1.4 From Paper to Plastic (6 min)**
 - At this point, the student should understand how we transitioned from using physical money to entering an era where money begins to be digital.
- **3.2 Digital Currency (6 min)**
 - You should end by giving a brief introduction to digital money, therefore, you can refer to reality, ask your students if they know any type of digital money to strengthen the concept of this money.

EVALUATION FOR THIS CHAPTER (8 min)

- Take class attendance.
- Identify if there are students who still have doubts and address them, such as:
 - The “Nixon Shock”.
 - Sound and Unsound Money.
- Additionally, these are some questions that you can ask the students to check their own understanding:
 - What was the Gold Standard? When and why did it change?
 - What was the Bretton Woods System?
 - What is digital currency?
- Keep a list of participative students during the class.

EXTRA MATERIAL

[Why the World Abandoned the Gold Standard](#)

Chapter #4

***What is Fiat
Money and Who
Controls it?***

Teacher Guide

Objectives

- Your main objective will be to explain how money became corrupted due to mismanagement by powerful entities.
- Focus solely on the concept of fiat money and who controls it.
 - Brief history of fiat money.
 - A monetary system by decree.
 - Fractional Reserve Banking: a system fueled by debt.
- Carry out and explain simply and clearly the chapter activity.
- You should maintain good attention from your students despite it being an extensive chapter.

Materials/Resources to be used

- Visual material from the chapter to help explain the timeline of the history of fiat money and strengthen understanding of concepts.
- If you want to interact with your students in the Fractional Reserve Banking activity, it is recommended to use paper to note down the amounts of money your students will deposit and withdraw from the bank symbolically.

CLASS OUTLINE AND ACTIVITIES

CLASS DURATION: 90 MIN

- **4.0 Introduction (10 min)**
 - At the beginning of the class, refer to what was seen in the previous chapter to provide feedback on part of the history of money until reaching the current fiat world.
 - You can start by asking questions to pique the interest of the students about this concept that is little known to them.
- **4.1 Brief history of fiat money (10 min)**
 - You should focus on explaining how sound money came to be in the hands of few individuals who only seek to enrich themselves, leaving civilians with paper backed only by the law or decree of use by these powerful entities.
 - Also, emphasize that the fact that gold ended up in the hands of few people caused the powerful entities to be able to control not only the issuance of money but also the market supply.
 - To help discuss the history of fiat money, use the visual timeline, while you clearly explain what happened in the years shown on the timeline.
 - Use images to improve understanding of the timeline.
- **4.2 The Fiat System**
 - **4.2.1 A system of monetary decree (10 min)**
 - Show the advantages and disadvantages of fiat money and the deficiencies today, to show in the end with the example of the chapter, how this money works.

- Mention the differences between money backed by a good or by trust and expand on the topic.
- **4.2.2 Fractional Reserve Banking: a system fueled by debt (10 min)**
 - To introduce this subtopic, ask questions to encourage student participation, such as:
 - Why are there so many financial entities that lend money? Why do they offer so many services and how do they take advantage of it?, among others.
 - Focus on explaining how these financial entities work and their purpose.
 - Explain what the incentive of a fractional reserve system is.
- **Activity - Fractional Reserve Banking (15 min)**
 - For this activity, it is recommended to prepare well for the explanation because at the beginning it may cause confusion for your students, so prepare visual material or examples that make the purpose of the activity more understandable.
 - You can carry out this activity with the help of your students using papers symbolizing bank accounts, which will also serve to write down the amounts symbolically held in the bank.
 - You can also choose to use a whiteboard to explain step by step as seen in the image of the activity.
 - If you consider that your students have trouble understanding the calculation of the 10% reserve, you can use a more understandable percentage such as, for example, a 50% reserve.
- **4.2.3 Who controls the fiat system and how do they benefit? (15 min)**
 - The purpose of this subtopic is to explain in detail who controls fiat money, as well as how they benefit from the business they have created.
 - How monetary policies and indicators such as inflation affect.
 - Explain how the role of the Federal Reserve works in terms of money issuance, activity, and control within the market.
 - Highlight the example of how a financial crisis occurred in 2008, this will help relate the information to reality and highlight the problems brought by the fiat system.
- **4.3 Central Bank Digital Currencies: The Future of Fiat Money (10 min)**
 - Since the term CBDCs was mentioned earlier, ask your students if they remember what CBDCs are, this way your students can participate.
 - Explain what they are and for what purpose these currencies have been created.
 - Highlight the problem posed by the creation of CBDCs to lay the groundwork for the next chapter.

EVALUATION FOR THIS CHAPTER (10 min)

- Take attendance.
- This chapter may raise questions. Prepare to answer questions like:
 - Should I withdraw my money from the bank?
 - Where could I store my money?
 - Should I keep a bank account?

- Additionally, these are some questions that you can ask the students to check their own understanding:
 - What's the Gold standard?
 - When was the "birth" of the Fiat system as we know it today?
 - How does Fractional Reserve Banking work?
 - What are CBDCs?
- Keep a list of participating students.

Chapter #5

How Problems Lead to Solutions

Teacher Guide

Objectives

- Teach how money has been losing its purchasing power over the years.
 - Monetary inflation and its effect on purchasing power.
 - Impact on society - Increase in Wealth Inequality.
- Show the consequences of money being under a centralized system.
 - The Global Debt Burden.
- Verify information about the problems caused by fiat money by conducting activities and using examples to explain concepts and key points.

Materials/Resources to be used

- Monopoly bills or similar.
- Chocolates or candies to be used in the auction activity.
- Computer to share visual material about the chapter.

CLASS OUTLINE AND ACTIVITIES

CLASS DURATION: 90 MIN

- **5.0 Introduction to the Problem (5 min)**
 - For the introduction, you should provide a brief recap of what was seen in the previous chapter, emphasizing how we went from having sound money to having unbacked money with no printing limits, with the entities controlling its circulation being based on debt.
- **5.1 Decrease in Purchasing Power**
 - **5.1.1 Monetary Inflation and its Effect on Purchasing Power (10 min)**
 - To explain the decrease in the purchasing power of money due to monetary inflation, use the example of Alex, Bob, and Charlie. This will better explain the phenomenon and lay the groundwork for subsequently moving on to the auction activity.
 - Look for other examples among students of the impacts of inflation on daily life. If there is no student interaction, another example can be mentioned.
- **Activity - The Effects of Inflation: An Auction Activity (15 min)**
 - Before starting the activity, read and analyze the instructions in the book to make it easier to organize and carry it out.
 - Your focus within the activity should be to show students how the price of the same product increases due to more monetary supply causing inflation. For this, you should use the price at which the product was sold in the first round of the auction as a basis, and then compare it with the price at which the product was sold in the second and third rounds to deduce the percentage of inflation that the product has experienced.
 - If you don't have chocolates or candies, you can use products with similar characteristics. Remember that the product must be the same or similar, as the purpose is to show how the *same product* can be greatly affected by monetary inflation.

- Instruct your students to write down the total amount distributed in each round of the auction. They should use the table shown in the book.
- For the conclusion, ask questions related to the activity.
- **5.2 The Global Debt Burden and Social Inequality**
 - **5.2.1 Impact on the Individual - Loss of Purchasing Power (8 min)**
 - The aim of this subtopic is to show how the dollar has lost its purchasing power over the years. Use images and the example of Jaime and his grandfather to help better understand this concept.
 - **5.2.2 Impact on Society - Increase in Wealth Inequality (8 min)**
 - Explain the reason for wealth inequality within society, focusing on explaining that money is in the hands of a few people who control it, which allows them to have control and decision-making power over the market, thus deciding how money will be distributed.
- **Activity - Consequences of the Fiat System (8 min)**
 - The discussion will focus on student participation. Encourage participation based on anecdotes or the reality they face in their community or country.
 - **5.2.3 The Global Debt Burden (8 min)**
 - Under this subtopic, the objective is to explain how the fiat system causes many countries to increase their debt. To explain it graphically, use the spiral image showing the percentages representing each one's debt, emphasizing that this debt only continues to grow, thus having a negative impact on society.
 - Explain the incentives that companies and governments have to go into debt.
- **5.3 The Cypherpunks and the Search for a Decentralized Currency (3 min)**
 - After analyzing all the problems caused by the fiat system, introduce your students to the solution devised by the Cypherpunks.
 - **5.3.1 The Cypherpunks (7 min)**
 - Explain who the Cypherpunks were, talk about their history and purpose.
 - Refer to the QR code so that your students can obtain more detailed information about the Cypherpunks.
 - **5.3.2 Centralized vs Decentralized Systems (7 min)**
 - Talk about the functioning of both systems, emphasizing the problems with centralized systems and explaining how a decentralized system provides solutions to the problems of the opposite system.
 - Explain how systems in nature are typically decentralized and how Bitcoin aligns with this nature.
 - Explain how we all have the challenge of thinking differently about the systems we use and create to align them more with this philosophy.

EVALUATION (8 min)

- Take attendance of students in class.
- Always keep a list of students who participate in class, ask more questions, and questions, concepts, and information to check understanding of the students:
 - What causes inflation?
 - What are we referring to when we say "Loss of Purchasing Power"?
 - What do you think are some of the Impacts on society due to inflation?
 - What is a Cypherpunk?
 - What's the difference between Centralized vs Decentralized?

Chapter #6

An Introduction to Bitcoin

Teacher Guide

Objectives

- Explain how bitcoin started and who its creator was.
- Provide a simple introduction to its operation and the main players in the Bitcoin network.
- Carry out the consensus-building activity.
- Teach how bitcoin gradually fulfills the three functions of money, hand in hand with its adoption.

Materials/Resources to be used

- Paper pages to symbolize transactions in the consensus activity.
- Good internet connection to show videos in class.
- A computer or mobile device to share visual and audiovisual content with your students.

CLASS OUTLINE AND ACTIVITIES

CLASS DURATION: 90 MIN

- **6.0 Satoshi Nakamoto and the Creation of Bitcoin (10 min)**
 - Start by commenting on and showing the prehistory of bitcoin and what technologies existed and since when.
 - Introduce this chapter by showing how, based on the vision of the group of people called cypherpunks seen in the previous chapter, the creator of bitcoin used their work as a basis to make the creation of Bitcoin possible.
 - Show your students the date when bitcoin was first introduced, through the technical report (white paper). Refer to the QR code so your students can access and read the original white paper.
 - Show the year the first block was mined to strengthen knowledge about the time when Bitcoin was created and first known.
- **6.1 How Does Bitcoin Work?**
 - **6.1.1 Nakamoto Consensus Mechanism (8 min)**
 - Explain that, to use bitcoin, it is not necessary to know all the technologies that make it up, but it must be understood that to be within the Bitcoin ecosystem, people must adhere to a set of rules or protocol that determine how the network operates.
 - **6.1.2 The Players of the Game (10 min)**
 - Teach who the main protagonists of the network are and describe their characteristics and functions.
 - Highlight their importance according to their functions within the network and how they compose the decentralized network characteristic of Bitcoin.
 - Look for analogies or different ways to explain these concepts to ensure an understanding of the ecosystem and its function within it, laying the groundwork for the rest of the course.

- **Activity: Consensus Building in a Peer-to-Peer Network (20 min)**
 - Before starting, organize your students into two equal or similar-sized groups.
 - Your focus within this activity should be to explain how the network consensus works and discuss with your students why they consider this process important within a decentralized system.
 - Follow the instructions of the activity.
 - Ensure to explain the concept of the Byzantine Generals at the end of the activity as a conclusion.
- **6.2 Bitcoin as Sound Digital Money**
 - **6.2.1 Introduction (8 min)**
 - Watch the 1:37 min [video](#) ¿What is Bitcoin? in class.
 - Previously, analyze the video on your own and write questions related to the video that will help you encourage student participation after watching the video again in class.
 - Explain the principles of Bitcoin.
 - **6.2.2 Bitcoin Characteristics (8 min)**
 - Explain how Bitcoin meets characteristics that refer to the properties and functions of money seen in **Chapter 2**.
 - The purpose is to demonstrate to your students how Bitcoin continues to evolve into a unit of account. Relate this evolution to the reality experienced in El Salvador, serving as an example of the evolution of money within a society until it is fully accepted or, in other words, until it is adopted.
- **Activity: Class Discussion - Is Bitcoin Sound Money? (10 min)**
 - To conduct the activity, use the table that compares different forms of money and their properties seen in **Chapter 2**. Also, refer to the concepts of each money property to fill out the table with your students.
 - During the activity, focus on the column where Bitcoin is located, as the other spaces have already been filled. Explain why bitcoin meets each of the characteristics and remind your students how important it is for money to meet all the properties.
- **6.2.3 Accepting Personal Responsibility (7 min)**
 - Under this subtopic, it is important to emphasize personal responsibility, as most people do not take responsibility for their money, leaving it to entities to manage. However, upon discovering the world of Bitcoin, you should show your students how technology returns that sovereignty to us and thus individual responsibility over our money.

EVALUATION (9 min)

- Keep in mind that within this chapter, students may become more curious about Bitcoin, so encourage them to verify the information. This way, if you encourage them to research and support them in their research, it will help their understanding of more complex concepts in later classes, such as those in Chapter 9.

- These are some questions that you can ask the students to check their own understanding:
 - Who was Satoshi Nakamoto and what was his idea when sharing the white paper?
 - When was the official launch of the Bitcoin Network?
 - What's the consensus mechanism?
 - What are the different roles in the Bitcoin Network and why are they important?
 - Have a list of class attendees.
 - Make a list of students you consider more informed about the topic of Bitcoin.

EXTRA MATERIAL

Bitcoin Whitepaper: <https://bitcoin.org/bitcoin.pdf>

Genesis Block seen from the mempool: <https://bits.monospace.live/block/height/0>

Chapter #7

How to Use Bitcoin

Teacher Guide

Objectives

- In this chapter, the purpose is to teach in a **simple yet clear and precise manner** the use of different tools for buying, exchanging, and using Bitcoin as a payment system, showing **not only through theory but also through practice**.
- Provide students with various options for exchanging or acquiring more Bitcoin.
- Show students the importance of **self-custody** in the Bitcoin ecosystem to **avoid the use of centralized systems to store sats**.
- Teach students that **there are different wallets** that can adapt to their needs.
- Perform activities for creating and restoring a **self-custodial wallet**.
- Analyze how to send and receive BTC using the recipient's address.

Materials/Resources to be used

- Visual material of the wallet to be used in class, which can be done using your cell phone and screen sharing or through images of the wallet interface.
- Students should have their cell phones and a good internet connection (to avoid wasting time, they will be asked in advance to download the wallet to be used).
- Sats to carry out the activities.
- Dice to exemplify the work of miners.

CLASS OUTLINE AND ACTIVITIES

CLASS DURATION: 90 MIN

- **7.0 Introduction Chapter on the practical application of Bitcoin (5 min)**
 - Provide a brief introduction while assessing if students have any distrust in conducting transactions due to specific fears, which will help plan a better approach according to the audience's needs.
- **7.1 Acquisition and exchange of Bitcoin (5 min)**
 - Briefly introduce the subsequent subtopics, emphasizing that mining Bitcoin is not the only way to acquire more sats.
 - **7.1.1 P2P: Physical (5 min)**
 - Explain to the student that one simple way to obtain Bitcoin is by exchanging their fiat money for Bitcoin with someone willing to sell their sats in person, or by providing a good or service in exchange for Bitcoin.
 - **7.1.2 P2P Exchanges: Online (5 min)**
 - Another alternative to exchanging Bitcoin is similar to the previous one, with the difference that it's online, showing that it's as simple as in-person transactions. Also, demonstrate that most of these platforms work as a contract that is fulfilled when both parties fulfill their promises.

- **7.1.3 Centralized Exchange Platforms (5 min)**
 - Although exchange platforms are usually the easiest way to obtain Bitcoin, emphasize that using these platforms comes with a cost, which is providing our personal information to these platforms.
 - Additionally, make it very clear that these platforms are not a secure place to store money long-term.
- **7.2 An Introduction to Bitcoin Wallets (3 min)**
 - In this introduction, explain to students that although we use a wallet, the sats are not specifically in the wallet but are directly recorded on the blockchain.
 - Emphasize the importance of the private key, as this key will be the only one giving us access to our sats through the wallet.
 - **7.2.1 Self-Custodial vs Third-Party Custodial Wallets (10 min)**
 - The main objective is to explain the characteristics of each type of wallet, highlighting the advantages and disadvantages of both.
 - Regarding self-custodial wallets, explain that these wallets are only for long-term savings due to their greater security and total responsibility on our part.
 - Since a third party has access to our money in custodial wallets, students might think it's an insecure wallet. Therefore, make it clear that this wallet is ideal for daily use.
 - Conclude by emphasizing that each wallet adapts to the individual needs of people.
 - Reiterate the importance of private keys.
 - **7.2.2 Different Types of Bitcoin Wallets (5 min)**
 - The name of the wallet depends on where the private key is stored.
 - Students should acquire knowledge about various wallets such as software and hardware wallets.
 - Use a table to show the types of wallets, along with their advantages, disadvantages, and the users they are most suitable for.
 - Show students that when choosing a wallet, they should pay attention to the important points mentioned in the book.
 - **7.3.3 Open Source vs Closed Source (4 min)**
 - The importance of the code lies in the fact that being publicly accessible increases the likelihood of preventing the software from closing. Therefore, make it clear to students that an open-source wallet is more reliable than a closed-source one.
- **Activity - In-Class Evaluation of Bitcoin Wallets (5 min)**
 - During the activity, guide students through the website so they can choose their wallet according to their needs, considering they are beginners, guide them accordingly.
 - It is recommended to share the screen of your laptop or cell phone to go hand in hand with the students, ensuring that no one gets lost during the activity.
- **7.3 Setting up a Mobile Bitcoin Wallet (10 min)**

- **Activity - Setting up/Restoring a Bitcoin Wallet**
 - In this activity, you will have two options to choose from based on your remaining time.
 - The objective is to teach students to create their own keys and store them securely.
 - If you choose option 2 of the activity, set a time limit for wallet recovery, for which you can use a timer set to 5 minutes.
 - Encourage the teacher to guide the students through the steps on their own devices.
- **7.4 Receiving and Sending Transactions (5 min)**
 - Introduce the student to how they can send transactions using the recipient's address, showing that they can use the address or QR code.
 - Explain that the address can also be sent via message or email or any messaging platform, making it easier to conduct transactions without the sender and receiver being in the same place.
 - Explain the steps through the wallet for clarity.
- **Activity - Bitcoin Transaction in Action (10 min)**
 - Before starting the activity, organize students into groups of four and assign a role to each (sender, receiver, node, miner).
 - Clarify the role of each according to the instructions mentioned in the book.
- **7.5 Saving in Bitcoin (4 min)**
 - When explaining Bitcoin as a form of saving, explain the reason behind it, referring to the chapters indicating how a centralized system negatively affects our savings.
 - Make it clear to students that Bitcoin is a safer form of saving as it protects against inflation and also protects our privacy by preventing data theft, hence safeguarding our savings.
- **7.6 Do Your Own Research - Don't Trust, Verify (4 min)**
 - To conclude, encourage students to always verify and research whether all the information they receive on the topic is completely accurate.
 - Encourage them to research further on what they have learned in class.

EVALUATION (5 min)

- Reassess if students still have the same fear of conducting transactions as they did at the beginning of the class.
- Ensure that all students have successfully completed the activities.
- There are usually students who want to start using a self-custodial wallet, identify them and assist them.
- There may also be doubts about how to use an exchange platform; to help students understand it better.
- These are some questions that you can ask the students to check their own understanding:
 - What's peer-to-peer?
 - What's an exchange?
 - What's Self-Custodial vs Custodial Wallets?
 - Open Source vs Closed Source.
 - How a Bitcoin Transaction Works.

Chapter #8

***Lightning
Network: Using
Bitcoin in Your
Daily Life***

Teacher Guide

Objectives

- Explain how the Lightning Network works.
- Help understand how the Lightning Network can benefit businesses for your students.
 - Buying Coffee and Groceries with Bitcoin.
 - Payment Plugins - E-commerce.
 - Gift Cards and Payment Cards.
- Explain different types of Lightning Wallets.
 - Self-Custodial Wallets vs. Custodial Wallets.
 - Open Source vs. Closed Source.
- Guide the student in setting up a Lightning invoice.
- Compare the traditional transaction processing system and Lightning.
- Show tools like [BTCPayserver](#) and [BTCMap](#).
- Conduct the lightning wallet relay race activity.
- Explain what a circular economy is and how it can survive using the Lightning Network.

Materials/Resources to be used

- Visual material from your phone or computer to guide students through the invoice setup process.
- Images of the tools mentioned in the chapter to provide good visual reference for students.
- Good internet connection.
- Ask your students in advance to download a lightning wallet to avoid delays during class.

CLASS OUTLINE AND ACTIVITIES

CLASS DURATION: 90 MIN

- **8.0 Introduction - Technology Evolves (5 min)**
 - Try to make your students wonder how the internet started, what its foundation was, and how the internet has been the basis for new technologies today.
 - The introduction will be brief, and you should explain to your students how everyday technologies like the Internet needed a foundation, and how on that basis, new technologies can be developed to improve the base technology. At the end of the introduction, explain that when executing a transaction, we will be sending satoshis, and likewise, explain the term using the table found in the chapter.
- **Activity** - Watch the video: "[Bitcoin Lightning Network Explained: How It Works in Reality](#)" (video duration 5 min)
 - Play the video for your students and analyze it with them.
- **8.1 The Lightning Network (5 min)**
 - Explain the benefits of Lightning compared to the main Bitcoin network.
 - Explain how Lightning helps execute cheaper and faster transactions.
 - Show with the table the advantages and disadvantages of both networks.

- **8.2 Different Types of Lightning Wallets (3 min)**
 - Introduce the student to the types of lightning wallets that, although they have the same functions as Bitcoin wallets, it is also important to emphasize the small differences.
- **8.2.1 Custodial vs. Non-Custodial Wallets (3 min)**
 - Ask your students questions related to the terms custody and self-custody to reinforce their knowledge of them.
 - Recommend using custodial wallets for beginners in terms of knowledge on the topic, and for more advanced individuals, self-custodial wallets are recommended.
- **8.2.2 Open Source vs. Closed Source (3 min)**
 - Reinforce knowledge based on the topic seen in the previous chapter.
- **8.3 Setting Up a Bitcoin Lightning Wallet (6 min)**
 - Introduce the student by reminding them of the steps followed in the previous chapter to create their bitcoin wallet, in this case, the same will be done, but with a lightning wallet.
- **8.4 Sending and Receiving Lightning Transactions (10 min)**
 - Using images, explain the process of a transaction through the lightning network.
 - Focus on the main protagonists, which are the sender, receiver, and the network of nodes.
 - Show the importance of node participation in the network for security and low transaction fees.
 - With both examples shown in the book, show your students how simple and fast transactions occur; it is important to use both examples since one more closely related to daily reality can improve understanding in students.
 - At the end of this subtopic, visually show your students the node network; for this, you can use the Mempool space website: <https://mempool.space/graphs/lightning/nodes-channels-map>
- **Activity: Lightning Wallet Relay Race (15 min)**
 - It is recommended to arrange students in groups of 5 to 8 students.
 - Each group will be given a small amount of sats, which will serve to send and receive in each group.
 - At the end, try to analyze with your students how fast and easy lightning is. It is recommended to have a stopwatch on hand to quantify the duration of the set of transactions.
- **8.5 Buying Coffee and Groceries with Bitcoin (8 min)**
 - Using the images found in the book, show your students the process of a transaction in a traditional payment system.
 - Make your students reason how this can generate loss of time and money for businesses due to high fees.
 - Reason with your students about how lightning solves the time and money lost factor in businesses.

- **8.5.1 Online: Payment Plugins - E-commerce (5 min)**
 - Show your students one of the tools that meet the characteristics of being open source, thus being more reliable and easy to use for people with little knowledge about wallets and ideal for use in businesses or entrepreneurship.
 - We recommend that the teacher explore the BTCpay Server previous to the class on their own to have more knowledge about its operation in case questions arise in class.
- **8.5.2 In-Person: Finding a Merchant in Your Area (5 min)**
 - The BTCMap tool will help your students locate businesses that accept BTC.
 - Since it is open source, entrepreneurial students can also register their businesses.
 - It is recommended to explore BTCMap in case questions arise in class.
- **8.5.3 Transition Tools: Gift Cards and Payment Cards (4 min)**
 - The student should know that they can buy gift cards with bitcoin that they can spend within the same store as long as the store accepts BTC in exchange for the card.
- **8.5.4 Circular Economies and Bitcoin as a Medium of Exchange (6 min)**
 - Explain to your students how the lightning network made possible the birth of the first circular economies around the world and in our country.
 - Show them that they can use one of the tools seen before to find communities that accept bitcoin or that are a circular economy.

EVALUATION (7 min)

- Take attendance of students in class.
- List actively participating students.
- These are some questions that you can ask the students to check their own understanding:
 - What's the lightning network?
 - What's an On-Chain Transactions?
 - What's a Seed Phrase?
 - What's a node?
- Ask yourself if your students understood your explanation, about lightning in a simple way and how it can help in many different ways on a daily basis.

Chapter #9

***An Introduction
to the Technical
Aspect of
Bitcoin***

Teacher Guide

Objectives

- Explain technical concepts in a simple and easy-to-understand manner
 - Public and Private Keys: Security through Cryptography
 - Hashing Explanation
- Teach bitcoin concepts by relating them to topics from previous chapters to facilitate understanding of the function of each element.
- Carry out chapter activities to put theory into practice.

Materials/Resources to be used

- It is recommended to use your computer to perform activities if available, if not, you can use your cellphone.
- A screen that allows you to share your device's screen, which will serve to guide students and present the videos found in the chapter.
- Internet connection
- If you do not have internet access, it is recommended to download the videos before class and have them prepared for presentation.
- A whiteboard will be used to explain some examples of cryptography.

CLASS OUTLINE AND ACTIVITIES

CLASS DURATION: 90 MIN

- **9.0 Introduction (5 min)**
 - Introduce students by explaining that to use something that seems super difficult, it is not necessary to know the functioning of all the elements with precision since this is reflected in the daily use of the internet, which everyone knows how to use without knowing all the elements that compose it.
 - However, encourage your students to continue exploring technical topics if they are interested.
 - Refer to the resources at the end of the book.
- **Activity - Watch "[How Bitcoin Works Under the Hood](#)"** (video duration 20 min)
 - If the video QR is not in the native language of your students, it is recommended to search for another similar video in your own language.
 - Analyze the video with your students by asking questions related to the video, always ensuring to address any doubts that arise during class.
 - Keep in mind that the video will help you visually demonstrate some of the concepts of the chapter and how they function within the network, so there is no need to try to explain everything at the beginning since the chapter will help you understand step-by-step.

- **9.1 Public and Private Keys: Security through Cryptography (7 min)**

- In this subsection, your objective will be to explain the importance of public and private keys, showing that to verify information without modification, the public key is used, and the private key is the one that gives us total access to the information. Therefore, emphasize the importance of taking care of this, both in the custody of the money and in the transfer of it using these keys, which will also serve us, one as a signature and the other as a decoder.
- You should briefly introduce how cryptography works using the example from the book and its corresponding image.
- Refer to the Extra Material section
- If you have a whiteboard, it is recommended to use it to explain cryptography.

- **9.1.2 Explanation of Hashing (5 min)**

- It is recommended to introduce the explanation of this concept mainly using the examples provided in the chapter. After that, you can explain the exact concept and then apply the knowledge in practice.
- Activity - Generate SHA 256 Hash (3 min)
- Instruct your students to access the QR codes found in the book.
- If you do not have access to the websites for generating a hash, you can access the link: <https://tools.keycdn.com/sha256-online-generator> or <https://academo.org/demos/SHA-256-hash-generator/>
- Use this activity to explain how transaction information is encoded.
- Also, mention that no matter how minimal the change in the information is, the hash always changes, but its length is unique regardless of the amount of information.

- **9.2 The UTXO Model (8 min)**

- This topic may be confusing for your students, so it is also recommended to use examples from the book or any that you can think of, as long as they go to the main point, which is the UTXOs.
- After explaining the theory, it is recommended that you can use the mempool to explain how to verify the UTXOs of our transactions
- Go to this link that will help you show your students real UTXOs: <https://bits.monospace.live/tx/f36c97e1c0c7a48022fbc7795a1861babfaf5034d9b9c078bc6b3176cca69d9c>. You can use a different transaction.

- **9.3 Bitcoin Nodes and Miners (3 min)**

- To introduce the sub-topic, refer to what was seen in Chapter 6, subsection 6.1.2.

- **9.3.1 What is a Bitcoin node and how do I set one up? (5 min)**

- You should teach your students the main purpose of a node and how it benefits the sovereignty of our transactions if we run our own node.

- **Activity - Watch “How to Setup Bitcoin Core”** (video duration 5 min)

- This video will serve as a guide to install and run Bitcoin Core easily on the computer.
- Since downloading the blockchain is too heavy, nothing will be downloaded, but address your students' doubts.

- Analyze the video by asking questions related to the video.
- Refer to the link to download Bitcoin Core: <https://bitcoincore.org/en/download/>
- Show your students images of a node, you can search for it on the internet.

- **9.3.2 What is a Bitcoin miner and how does mining work? (10 min)**

- Focus on explaining the main purpose of miners and how they secure the network through their work. It is important to emphasize the commission they receive for their work so that students understand why Bitcoin network fees are higher.
- Bitcoin Halving: To explain this part, you can also use visual aids like the mempool to accurately show the block corresponding to each halving that has already occurred with its respective year using this link <https://bits.monospace.live/>. To use this tool, go to the section to search for a specific block, which will be block #0 or the Genesis block, which should be from the year 2009. Keep in mind that halving occurs every 4 years or every 210,000 blocks, so the first halving occurs in that block. On the left side of the block, general information will appear, giving the year 2012 when the first halving occurred. After that, you can add 210,000 more to reach the next halving, and so on until you reach the current halving. This way, you can teach your students about the topic in a truthful manner.
- Remind your students about the hashing topic discussed earlier and how this is an important part for Bitcoin authenticity through mining.

- **9.4 What is the Mempool? (3 min)**

- As an important part of the node, it's important to show how nodes operate by extracting transactions from this space to be verified by them.
- Show the reasons why transactions can sometimes take longer than average.

- **Activity – Mempool (5 min)**

- To carry out this activity, go to the link: <https://mempool.space/es/> or use the QR code from the book.
- To answer the questions from the book along with your students, select the last mined block.
- To see its information, just scroll down a bit and all the block's information will appear, from its hash to the miner who mined that block.
- After seeing the information, show your students the set of transactions that make up the block and select one of them to practice the topic of UTXOs.
- Be prepared for questions like: "What does the size of the observed blocks depend on?" To answer the question, explain that the size of the blocks depends on the amount of information it contains and not on the amount of BTC transacted. You can verify this by hovering over a small block, and you will see the amount it contains, realizing that sometimes its size does not depend on the amount of BTC it contains.

- **9.5 How Bitcoin transactions work from start to finish - sender, receiver, node, miner, mempool (8 min)**

- While explaining the steps of how a transaction occurs, use visual aids like those provided in the book to be clearer.

Evaluation (7 min)

- Always keep track of the attendees in the class.
- Make a list of active students in class.
- Try to identify students interested in the technical topic to continue supporting them in case they have doubts or are eager to learn more.
- These are some questions that you can ask the students to check their own understanding:
 - Name at least 4 of the Mechanics of the Bitcoin Protocol
 - What are the Public and Private Keys? What's the function of each?
 - What is a function? (in bitcoin)
 - What is a hash function?
 - What are UTXOs?

Chapter #10

Why Bitcoin?

Teacher Guide

Objectives

- Summarize the lessons learned throughout the Bitcoin Diploma.
- Discuss with the students as a recap of the Diploma on *Why Bitcoin?*
- Explain clearly what the CBDCs are, how, and who controls them.
- Explain how Bitcoin operates in contrast with the fiat system/world.

Materials/Resources to be used

- A screen that allows you to share your device's screen, which will serve to guide students and present the videos found in the chapter.
- Internet connection.
- If you do not have internet access, it is recommended to download the videos before class and have them prepared for presentation.

CLASS OUTLINE AND ACTIVITIES

CLASS DURATION: 90 MIN

- **10.0 Introduction (15 min)**
 - Introduce the chapter to your students, this is the concluding chapter in which we'll summarize the lessons learned.
 - Play the video for your students and analyze it with them.
- **10.1 What are Central Bank Digital Currencies (CBDCs) and Who Controls Them? (15 min)**
 - Explain what are and how the CBDCs work.
 - Show the data of the countries that are trying CBDCs on the Human Rights Foundation's CBDC tracker and explain what this means for the people in these countries.
 - CBDC vrs Bitcoin explanation.
- **10.2 The Philosophy of Bitcoin (15 min)**
 - Explain what the philosophy of Bitcoin is all about: empowerment, freedom, financial independence, critical thinking, among others.
 - Explain how this is in contrast to the fiat world, where sometimes more wealth directly translates to having more influence and control.
- **Activity - Class Discussion - Do You Have the Right to Control Your Own Money? (10 minutes)**
 - Carry on the discussion with the 10 questions with the students.
- **10.3 The Benefits of Bitcoin (10 min)**
 - Explain the concept of "Hyperbitcoinization", and what the future would look like if this -for now- theoretical scenario happens.
 - Explain the growing interest in Bitcoin by everyone and the highlights and the potential impact of its widespread adoption on the economy and society.
 - Explain and discuss the benefits of a hyperbitcoinized world presented in the workbook.

- **10.4 An Empowered Future (10 min)**
 - Explain how Bitcoin *is money*.
 - Listen to the student's view of this subject after your explanation.
- **Activity - FINAL Class Discussion (15 min)**
 - Ask the students to answer the questions that were presented in Chapter 1 with their own perspectives after the learning journey of the Bitcoin Diploma.
 - Ask them to compare and discuss the original answers and questions. Did something change? Carry on the discussion.
 - Have a discussion about "What's next"? How do they think they'll use this new knowledge for themselves?
 - Share the additional resource sections.
 - Carry on the FINAL assessment if provided.



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