ELECTRIC MONEY

TEACHING GUIDE: LESSON TWO

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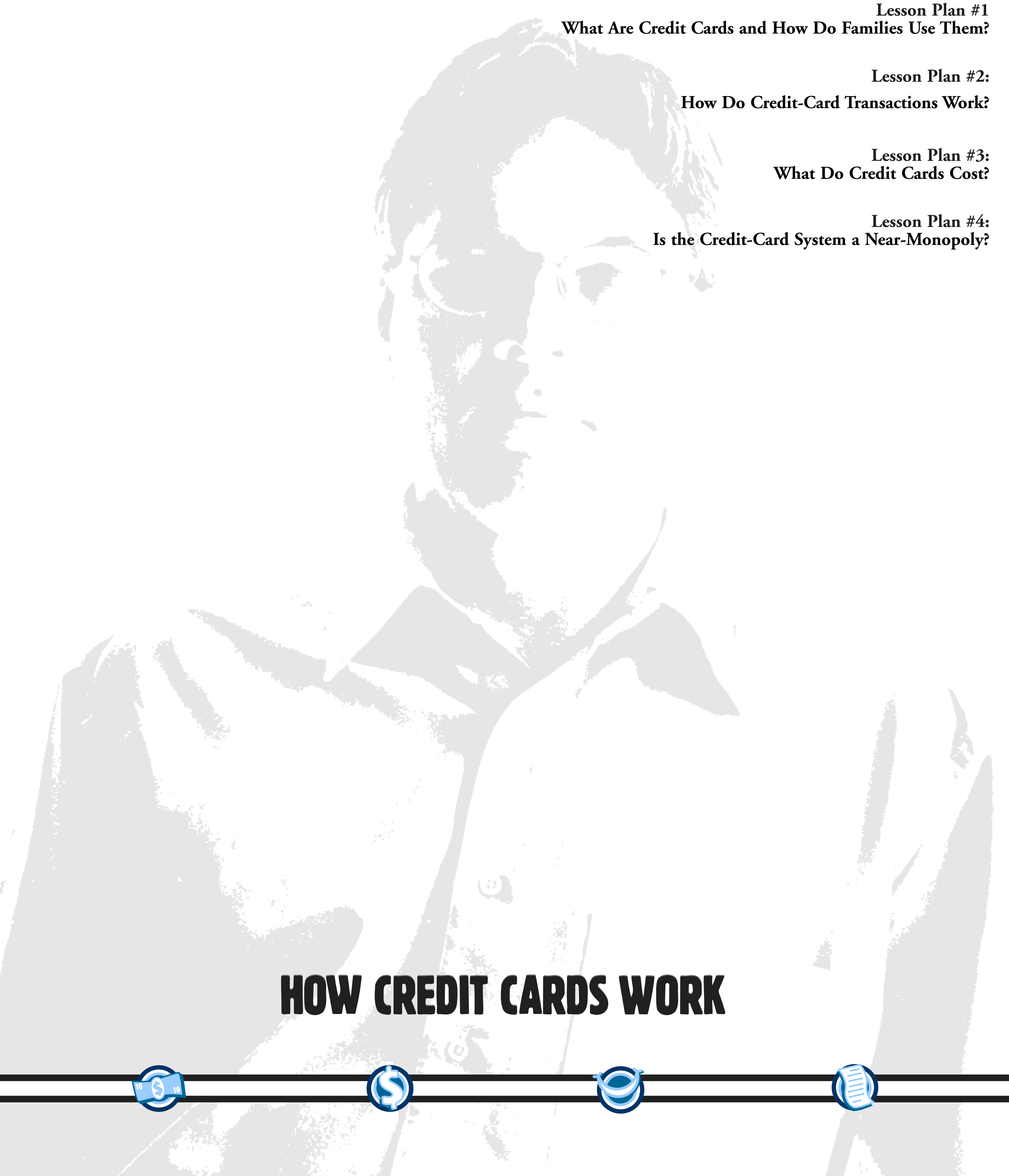

HOW CREDIT CARDS WORK

Teacher's Note: *Most of the lessons presented below involve student discussion of topics relating to credit cards. In some lessons, students will do research on credit card use or terms of credit card offers and the discussion will focus around the results of their research.*

Because much of this material may be unfamiliar to teachers, each of the lessons has an extended presentation of background information for teachers. This information, along with additional materials from the references cited in the section called "For More Information," should help you to be an informed discussion leader.

Lesson Plan #1: What Are Credit Cards and How Do Families Use Them?

Grade Level: 9–12

Time required: 15–30 minutes, or more if desired

Overview:
This lesson invites students to engage in a discussion about the nature and use of credit cards. It could be used either before or after viewing the video "How Credit Cards Work." The discussion should be guided by the teacher to focus on the two important roles that credit cards play: as a medium of exchange that substitutes for money and as a source of unsecured consumer credit.

Objectives:
After the discussion the students should know:

- What kinds of transactions are best suited to credit cards and why.
- How credit cards are beneficial to consumers both as a transactions medium and as a source of credit.
- The advantages and disadvantages of credit cards to merchants.
- How consumers can get themselves into trouble by accumulating too much credit-card debt.

Related National Standards:
NCEE Standard 11: Money makes it easier to trade, borrow, save, invest, and compare the value of goods and services.

Materials:
VCR to view the video segment before the discussion

Background Information for Teachers:

Credit cards have become an important part of our economy. They serve two main functions, each of which has important benefits for consumers. First, they function as instruments of payment that are often more convenient than cash or checks. Second, credit-card lending is a source of consumer credit that is often more convenient—though usually more expensive—than other kinds of consumer loans. This lesson will allow your students to learn how credit cards work and to discuss some of the issues surrounding the role of credit cards.

• What is a Credit Card?
A credit card itself is merely a piece of plastic containing identifying information about a credit account that you (the owner of the card) have established with a bank or other institution. This credit account is a pre-approved line of <u>unsecured credit</u> offered to you. This means that you have not pledged to forfeit to the bank any <u>collateral assets</u> in the event that you fail to pay what you owe. Prior to the development of credit-card lending, most consumer loans were for specific purchases of durable goods, such as homes and cars (as many still are), and the title to these durable goods was held by the bank as collateral. Failing to make payments on your home mortgage or your car loan results in the bank foreclosing and taking possession of your house or your car. Banks have no specific assets that they can seize in response to non-payment of credit-card balances, so they are called unsecured loans.

• Credit Cards as Transactions Media

Credit cards are also a convenient <u>transactions medium</u> in many situations. Modern communications media have made it possible to order merchandise by telephone or over the Internet. However, it is largely impossible to transmit cash or checks by these media. If you had to send a check by mail every time you ordered something over the phone, your transaction would be no faster than if you ordered by mail. By giving your credit card number over the phone, the merchant need not wait for your check and can send the merchandise immediately.

A second advantage of a credit card as a payments medium is that merchants can easily recognize and authenticate the card. If a customer presents a check in payment, the merchant must worry about whether or not the customer actually has sufficient funds in his or her checking account to complete the payment. For frequent customers and local banks, it is not too difficult to build sufficient trust between merchant and customers to allow checks to work well. But many merchants are reluctant to take out-of-town checks because of the difficulty of tracking down customers whose checks are returned by the bank.

Even calling the customer's bank to verify the availability of funds does not guarantee that the merchant will be paid. Checks usually take between a day and a week to clear through the banking system and be debited from the customer's account. Even if the customer's balance was sufficient at the time that the merchant accepted the check, it may not be able to cover the transaction once the check finally reaches the bank.

In order to promote the widespread acceptance of credit cards, the issuing banks <u>guarantee payment</u> to the merchant as long as he or she follows the procedures established for transaction approval. Before computer networks, this meant checking the customer's signature against the one on the card and looking up the card number in a book of invalid card numbers (stolen cards, closed accounts, non-paying customers, etc.). Now, approval happens in seconds by computer link. Because the merchant is guaranteed payment on any approved transaction, accepting a credit card is less risky than accepting a check from a customer whose creditworthiness is unknown.

• Credit Cards as a Source of Consumer Credit

Unsecured lending was riskier for banks than secured lending, so some banks were reluctant to enter the credit-card market. However, once banks learned more about the risks and potential profits, credit-card lending took off. Banks have found ways to manage the risk of their portfolios of credit-card lending. For example, experience has taught them what kinds of default rates to expect from various categories of cardholders. That enables them to tailor interest rates, annual fees, and credit limits to individual cardholders in a way that compensates them for inevitable losses.

Moreover, banks that want to reduce their overall holdings of credit-card debt can now do so by <u>securitization</u>—bundling a batch of credit-card loans together and essentially selling them to another bank or a nonbank investor. The original bank continues to collect the cardholder's payments, but effectively passes them on to the new owner (minus a processing fee) who bears the risk of default. These developments have allowed banks to greatly expand their credit-card lending without incurring great increases in risk.

For consumers, credit-card lending has provided an unprecedented degree of flexibility in the short-run timing of purchases. With a credit-card account, you can hire a repairperson to fix your furnace in mid-January even if you won't have cash to pay for it until payday arrives at the end of the month. You don't have to apply for credit from the repairperson or anyone else—all the credit terms are arranged in advance through the credit-card agreement. You can even spread the payments over several months or longer if you are willing to pay interest at a fairly high rate.

• Abuse of Credit Cards

Ready access to credit cards gives consumers a very convenient tool for timing their payments, but it may also give them the opportunity to go so far into debt that they have trouble catching up. If all consumers were well enough informed that they recognized the consequences of credit-card borrowing as they made purchases, then the only people who would get into trouble with excessive debt would be those who choose to. They might decide that future credit problems are worth it either because they intend to default (and thus commit fraud) or because they place a tremendously high value on having the goods immediately that they purchase with their cards.

However, consumers may get into credit problems unwittingly if they do not fully realize how difficult repayment will be or if they suffer job loss or some other unexpected, adverse event that diminishes their ability to repay. Some have argued that the ready availability of credit cards encourages consumers to get themselves into these problems. It is an open question (and one that can lead to interesting discussion) how much responsibility banks bear for abuse of credit cards. (To what extent is the seller of a knife responsible if the buyer uses it to hurt himself?)

Activity:
This activity involves a guided discussion. Students are likely to have a lot to say about credit cards. One strategy that may be effective is to open the discussion with very general questions, then try to raise some of the issues above in response to their comments. However, students may give personal anecdotes that reveal embarrassing details of family finances. (You might want to tell them before the discussion starts that they should use good judgment about what they say.) The topic might also be uncomfortable for students from poorer families who do not have access to credit cards. Some ideas for discussion-starters:

- What is a credit card and what does it mean to use one?
- How and why does a typical family use credit cards? For what kinds of purchases are they most likely to use a card?
- How would a typical family's economic life be less convenient if credit cards did not exist?
- If you were a merchant, how would you decide whether or not to accept credit cards? Would you accept them for all transactions or just for some?
- What are the advantages and disadvantages of credit cards relative to cash and checks for consumers and for merchants?
- How can credit cards cause problems for consumers? To what extent is the bank that issues the card responsible for people who get into trouble because they can't repay their credit card debts?

Assessment Recommendations:
Active and positive contribution to the discussion may form the basis for assessment. You may also include questions about credit cards on exams or ask the students to write a short essay. The discussion questions above could be the basis for exam questions or essay topics.

For More Information:
An excellent source of information about the credit-card industry is:

- Evans, David and Richard Schmalensee. *Paying with Plastic: The Digital Revolution in Buying and Borrowing.* Cambridge, Mass: MIT Press, 2000.

Lesson Plan #2: How Do Credit-Card Transactions Work?

Grade Level: 9–12

Time Required: 15–30 minutes, or more if desired

Overview:
While most of your students are familiar with the idea of paying by credit card, few have probably stopped to think about the process that must happen between the moment a customer pulls out the card to the final settlement of the credit-card bill. This lesson uses the video segment "How Credit Cards Work" to motivate a discussion of the process involved, what companies are part of it, and how they earn sufficient revenue from the process to cover their costs.

Objectives:
After viewing the video and participating in the discussion, students should know that in addition to the customer and the merchant, there are typically two banks involved in a credit-card transaction, plus the card company (Visa, MasterCard, etc.). Each of these shares in the revenue from credit-card transactions, which consists of a transaction fee paid by the merchant in the form of a discount, plus the finance charges and other fees paid by the cardholder.

Related National Standards:
NCEE Standard 11: Money makes it easier to trade, borrow, save, invest, and compare the value of goods and services.

Materials:
VCR to view the video segment before the discussion

Background Information for Teachers:
While all of us are familiar with how we use credit cards, we often don't stop to think about all of the steps involved in the transaction and the different businesses that provide services along the way. This lesson focuses on how a credit-card transaction works, who is involved, and how each company along the way profits from the transaction.

• Structure of Transaction
When you present a credit card (say, a Visa card), the clerk usually swipes the card through a machine that reads information from the magnetic stripe on the back of the card, then types the amount of the purchase on the machine's keypad. The machine contacts (by telephone line) the Visa computers, which route the call to the bank that issued the card, which then verifies that the account exists, that the card being used has not been reported as stolen, and that the transaction would not put the customer over his or her credit limit. Assuming that everything is in order, the transaction concludes with you signing the credit slip.

• Who Is Involved?
Besides you and the merchant, there are several intermediaries involved in a typical credit-card transaction. The Visa and MasterCard organizations are cooperative ventures owned by the banks that issue their cards. In addition to the organizations themselves, there are two banks involved in most credit-card transactions—the acquiring bank that handles the merchants credit-card account and the issuing bank that issued the card to you. In order for the transaction to flow smoothly, these three companies must be able to cooperate in passing information very quickly.

The cardholder's issuing bank has up-to-date information on the customer's account status. However, it would be inconvenient if each merchant had to figure out which bank issued the card and call a specific phone number for each bank—there are thousands of banks that issue credit cards. Thus, Visa's computers and the card-issuers' computers work together so that the merchant can communicate only with the Visa network, which then routes the request to the appropriate bank to transmit account information.

The Visa network also coordinates the transfer of funds from the issuing bank, which pays for the merchandise and extends credit to the customer, to the acquiring bank, which holds an account in the merchant's name. Although the settlement process has sped up with the advent of electronic processing, the actual transfer of money between the banks and the actual debiting of the purchaser's account usually does not happen until a day or two after the actual transaction date. In the meantime, the issuing bank usually places a pending charge on the customer's account, counting the transaction against the customer's remaining available credit limit even though the transaction has not yet cleared.

• How Does Each One Profit?

Each of the banks involved spends a lot of money on the computers and personnel that operate its credit-card services. The Visa or MasterCard organization incurs similar processing costs to coordinate the information flow among banks. These organizations are businesses that would not undertake these activities unless they expected to cover these costs and make a profit on the operations. Where does the money come from?

The Visa and MasterCard organizations are funded by membership dues and fees paid by the banks that make up the organizations. The banks themselves have two main sources of revenue from credit-card transactions. First, the acquiring bank charges a fee to the merchant in the form of a discount on credit-card transactions. For example, if you charge a $100 item, the merchant only receives a credit of $98 or so. The acquiring bank keeps about two percent of the transaction amount, some of which is shared with the issuing bank through an interchange fee that is paid by the merchant's bank to the cardholder's bank.

The second source of revenue is the fees and interest charges that issuing banks collect from their cardholders. These revenues depend not on the number or size of transactions, but on the number of cardholders paying annual fees and on the volume of cardholders' balances that are not paid off within the grace period before interest begins to be charged.

Whereas the acquiring bank gets revenue by withholding about two percent of the value of each transaction, the issuing bank gets revenue by the interchange fee it receives from the acquiring bank and through any charges it collects from cardholders. The Visa and MasterCard networks receive money from dues and fees paid by all of the banks that belong to their systems.

Activity:

This activity consists of a guided discussion based on the video segment. Students are probably fairly familiar with the transaction aspect of credit-card use from the consumer's perspective. However, the producer's role is unlikely to be something about which they have thought.

One way to make this subject more relevant to the students is to ask them to pretend that they have just set up a company to sell something that they make. Because they are going to sell over the telephone, they will need to accept credit cards. Ask them to think about what has to happen in order for the payment to go through when a customer gives them a card number for a transaction. Among the questions they will need to consider are:

- How do we get started accepting cards? (They would need to contact an acquiring bank that can set them up with a terminal giving them access to the appropriate computer network.)
- What bank issued the card that this customer is using? Do we need to contact that bank to get paid? (No. You can just work through the MasterCard or Visa network; they will handle the routing.)
- How much is this going to cost us? (You will pay about two percent of your credit-card transactions as a processing fee. There may also be fixed monthly charges.)
- Should we give cash discounts to customers who pay cash? If so, should we also give discounts for customers who write checks?

Assessment Recommendations:

Students can be evaluated on the basis of active participation in the discussion. Alternatively, they could be given a hypothetical merchant role and asked to assess in an essay the advantages and disadvantages of accepting credit cards as payment. You could even give different students different situations (book store, convenience store, restaurant, street vendor, etc.) and make use of the differences in their analyses in a follow-up discussion.

For More Information:

An excellent source of information about the credit-card industry is:

- Evans, David and Richard Schmalensee. *Paying with Plastic: The Digital Revolution in Buying and Borrowing.* Cambridge, Mass: MIT Press, 2000.

Lesson Plan #3: What Do Credit Cards Cost?

Grade Level: 9–12

Time Required: Flexible depending on how much is done out of class by students; 90 – 120 minutes if all work is done in class

Overview:
Many people receive multiple offers of credit cards in the mail each week. Most offer enticements such as low initial interest rates or no annual fee. In this exercise, students examine the fine print of some credit-card offers to figure out how much using the card would cost for several hypothetical consumers with varying spending and repayment patterns.

Objectives:
To help students to become more informed about the true costs of using credit cards and how those costs depend on how the cards are used.

Related National Standards:
NCEE Standard 11: Money makes it easier to trade, borrow, save, invest, and compare the value of goods and services.

NCEE Standard 12: Interest rates, adjusted for inflation, rise and fall to balance the amount saved with the amount borrowed, which affects the allocation of scarce resources between present and future uses.

Materials:
VCR to view the video segment
At least three different credit-card offers received in the mail by teacher or by students' families

Activity:
Part 1: Examine Credit-Card Offers
Many households receive one or more solicitations for credit cards each week. Either bring in one that you have received or ask one of the students to bring one in. Having more than one may be useful since it will allow the students to compare them. In any case, it is a good idea to mark the application part with the word VOID in large letters, just to make sure that someone doesn't end up using the application dishonestly. (Encourage the students to have their parents do this before bringing it to school, so that the parents will know that it has been done.)

Have the students examine each of the offers to figure out what charges the cardholder will pay. Charges usually come in several categories:

- Annual Fee. This is a payment that is charged to the consumer once per year. Many cards have no annual fee. Sometimes the annual fee is waived for the first year but charged in future years.
- Interest Rate. What is the interest rate on purchases? Is there a different rate on cash advances? Is there a special rate for balance transfers that pay off another credit card? When does the balance start accruing interest? (How long is the grace period?) Be careful about interest rates. There is often an introductory teaser rate that is very low. This rate usually only lasts a few months, then the rate increases dramatically. Rates are sometimes indexed, which means that they move with a market rate such as the prime rate. If you find an indexed rate, have the students look up the current level of the rate to which it is indexed so that it can be compared with other rates.
- Fees and Charges. What is the charge for going over the credit limit? What is the charge for late payments? How much is charged for a cash advance? Are there other charges described in the fine print?
- Other Benefits. Some cards offer benefits such as frequent flyer miles or special insurance or

warranties on purchases. Check each card offer for these kinds of special provisions.

You may wish to make a table on the blackboard showing how the various offers compare on each criterion. This will allow the students to judge how much the offers vary and whether benefits of one kind on a particular offer are offset by disadvantages of another kind (for example, a lower interest rate but a higher annual fee).

Part 2: Determining the Cost of Various Credit Cards

Once you have investigated the charges associated with several card offers, divide the class into groups and assign each group to one card. Suppose that the card has a credit limit of $500, that it is opened on January 1, that the billing cycle ends on the first of each month, and that payments are due on the 15th of the month. Have each group compute the card cost in each month (and for the whole year) for each of the following cardholders:

Oscar: Charges $200 on January 15th. Pays $100 on February 15th. Charges $200 on February 20th. Pays $100 on March 15th. Charges $300 on March 20th (over credit limit). Misses payment in April. Pays off balance on May 15th. No activity the rest of the year.

Beulah: Charges $200 on January 15th. Pays $100 on February 15th. Charges $200 on February 20th. Pays $100 on March 15th. Charges $200 on March 20th. Pays $100 on April 15th. Pays off balance on May 15th. No activity the rest of the year.

Felix: Charges $200 on January 15th. Pays balance on February 15th. Charges $200 on February 20th. Pays balance on March 15th. Charges $300 on March 20th. Pays off balance on April 15th. No activity the rest of the year.

After the students have completed their analyses, a follow-up discussion could cover the following points:

- Who ends up paying the most?
- Who pays the least?
- Why?
- Is it the same for all card offers or are some card offers more costly to some customers than others?
- Why?
- If there are differences, how would you decide which card offer is best for you based on your buying and payment habits?

Part 3: Can You Use a Credit Card for Free?

For some of the card offers, Felix probably pays nothing. He incurs no interest or penalty charges, so if there is no annual fee, he seems to have zero cost. Does he really?

Explicit cardholder charges are only part of the payments to the credit-card industry. Merchants who accept credit cards also pay in the form of a discount of approximately two percent on the amount they receive on credit-card transactions. Thus, for the $600 or $700 dollars charged by our consumers in the examples, the banks running the card process would also receive about $12–$14 from the merchants.

Ask the students to think about who pays these charges. In order to pay the charges, the merchants must charge higher prices on purchases. Generally, these higher prices are charged to both credit-card customers and cash customers. Thus, part of the cost of credit cards is borne by everyone who buys from merchants who take credit cards. (Can your students think of examples of firms that give cash discounts? If so, these firms may make up the cost of the credit cards strictly from credit-card customers.)

Assessment Recommendations:
If your students did individual analyses of the cost of credit-card offers, they will have turned in materials that can form the basis for assessment. Participation in discussion can also be used. Alternatively, students could answer an essay exam question such as "Suppose that Jane has two credit-card offers, one with an annual fee but a low interest rate and one with no annual fee but a higher interest rate. How should Jane decide which one is best for her?"

For More Information:
The Board of Governors of the Federal Reserve System has an excellent guide to selecting a credit card at www.federalreserve.gov/pubs/shop. This shows how to compare various credit-card offers and to determine which will end up costing you the least. It also includes a glossary of the various terms used on credit-card applications.

Lesson Plan #4: Is the Credit-Card System a Near-Monopoly?

Grade Level: 9–12

Time Required: 15–30 minutes, or more if desired

Overview:
Economists stress the role of competition in assuring that firms are forced to keep prices low and service quality high. The prominence of Visa and MasterCard in the credit-card industry leads some to think it is a near-monopoly. This lesson consists of a guided discussion after viewing the tape segment "How Credit Cards Work" that considers whether the apparent concentration in the credit-card industry is a problem for consumers.

Objectives:
This discussion should reinforce ideas about competition and monopoly that students learn in economics classes by applying them to an industry with an unusual structure. After participating in the discussion, students should know that:

- Credit cards are issued by individual banks, not by Visa and Mastercard themselves.
- There are many banks competing for the customer's credit-card accounts, which keeps costs low and service quality high.

Related National Standards:
NCEE Standard 9: Competition among sellers lowers costs and prices, and encourages producers to produce more of what consumers are willing and able to buy.

NCEE Standard 11: Money makes it easier to trade, borrow, save, invest, and compare the value of goods and services.

Materials:
VCR to view the video segment before the discussion

Background Information for Teachers:
The credit-card industry can be quite confusing. As discussed on the video, there are thousands of banks that issue credit cards (though a few dozen large ones account for most of the cards), yet there are currently only three brands of bank credit cards: Visa, MasterCard, and Discover.

What makes the situation even more complicated is the nature of the Visa and MasterCard organizations themselves. Each of these is a cooperative venture owned by the banks that issue cards. Since most banks issue both kinds of cards, the two organizations are basically owned by the same group of banks.

Economics teaches us that competition is generally good. Firms that compete against one another are driven to lower their costs (and their prices) and improve quality, while monopolies can sometimes get away with inefficient production, poor quality, and charging high prices.

Should the fact that there are many banks issuing cards make us confident that market competition will keep the industry efficient? Or should we be worried about the fact that a few major brands dominate the industry, stifling competition and allowing high prices and low quality?

Visa and MasterCard as Cooperative Joint Ventures
As described on the video, the current structure of the credit-card industry evolved in the 1960s. A national card network was to every bank's advantage, since national acceptance would make each bank's cards more valuable. However, banks were reluctant to let any single bank (Bank of America at that time owned BankAmericard) domi-

nate the industry by owning the processing network. Under the pressure of mounting losses on credit cards, they agreed to a joint venture that became the Visa network. MasterCard evolved into a similar network, and under legal pressure the two networks agreed in 1975 to allow banks to join both.

Thus, in one respect, there is even less competition in the credit-card industry than there appears: Visa and MasterCard are owned by the same banks! However, the Visa and MasterCard networks play only a small role in setting the charges that consumers and merchants pay for using credit cards. Thus, there is virtually no opportunity for Visa and MasterCard themselves to charge monopoly prices.

Discover is an outsider in the credit-card industry. It was set up in 1985 by Sears and its affiliate Dean Witter. Unlike Visa and MasterCard, the Discover card is operated by a single bank: Greenwood Bank and Trust. This bank plays all of the roles in the Discover network: card issuer, merchant service bank, and network operator.

The presence of Discover as an outsider provides at least a little genuine competition among card systems. Moreover, the fact that Discover was able to enter the market in 1985 after the Visa and MasterCard networks were well established suggests that additional new competitors could come in if the existing firms used their near-monopoly position to raise charges or reduce service quality.

Competition in Issuing and Acquiring Banks

Because the card networks play such a small role in price setting, the place where competition really matters in the credit-card industry is among the banks that issue cards and service merchants. It is the bank issuing the card that determines the interest rate, annual fee, and other charges that are associated with the card. Similarly, the banks that service the merchants set the fees that they charge.

There are a few large banks that issue credit cards nationwide. As discussed on the video, Citibank was an aggressive early issuer and continues to be the largest issuer of Visa and MasterCards, but it had only eight percent of the total number of payment cards in 1997. (Discover was the largest single bank issuer with just under 10 percent of total cards issued.) Several other banks with national card programs followed with three to seven percent of the market.

These large card issuers not only compete against each other, but against local and regional banks that issue cards only to their local customers or within their local regions. With competition among banks at several levels, it seems very unlikely that even the largest bank issuer could set prices that are so high that it earns monopoly profits beyond covering its costs.

Most economists conclude, therefore, that the credit-card industry is quite competitive in the parts that matter most. Card issuing and servicing of merchants are the parts of the industry that set prices for consumers and firms. These parts of the industry have many firms competing against one another, so monopoly concerns are unlikely to be important.

Activity:

This discussion makes most sense for students who have studied (or are studying) the implications of competition and monopoly. Other students may not appreciate the economic importance of having sufficient competition in an industry.

To get the discussion started, you might have the students list the different charge card (credit, debit, travel-and-entertainment, etc.) brands that they can think of. Of course, Visa, MasterCard, Discover, and American Express are likely to dominate. Some may be aware of other minor cards (Diners' Club and Carte Blanche, or foreign cards). Others may suggest store or gas company cards, which is a good opportunity to distinguish the general-purpose credit card from the store charge card.

Once they have focused on the major brands, ask them if all Visa/MasterCard cards are the same. If some students have cards, ask them to compare them. Many will probably be from different banks. Are these cards the same? (Not necessarily.) Who issues the card and sets the terms of the credit agreement? (The individual bank.) How many different banks could a person get a credit card from? (Think about the guy on the video who has thousands.) What would happen if one bank tried to give worse terms (higher annual fee, higher interest rates, shorter grace period, etc.) to its customers than others? (Customers would, assuming they realized the difference, choose other cards.) Is the credit-card industry competitive? (Probably.)

Assessment Recommendations:
Participation in discussion is the most obvious method of assessment for this activity. You could also follow the discussion with exam or quiz questions such as "Who decides on the interest rate to be charged on credit cards, Visa or the bank issuing the card?"

For More Information:

An excellent source of information about the credit-card industry is:

- Evans, David and Richard Schmalensee. *Paying with Plastic: The Digital Revolution in Buying and Borrowing,* Cambridge, Mass: MIT Press, 2000.