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|  | Teaching the GSE:High School EconomicsComparative Advantage and Cookie Trade |
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Comparative Advantage and Cookie Trade

# Lesson Overview

## Lesson Description

This lesson uses the ingredients of chocolate chip cookies to teach the fundamental lessons of comparative advantage and the benefits of trade between economies. Students will make decisions based on their knowledge of their own ability to produce ingredients and other students’ abilities to produce ingredients in an attempt to acquire sufficient ingredients to make chocolate chip cookies for their “countries”.

## Essential Question

How can trade allow economies to have things that they could not produce on their own?

## Economic Concepts

* + comparative advantage
	+ absolute advantage
	+ opportunity cost
	+ trade
	+ gains from trade
	+ production possibilities

## Georgia Standards of Excellence

SSEF3 – **Explain how specialization and voluntary exchange influences buyers and sellers.**

1. Explain how and why individuals and businesses specialize, including division of labor.
2. Explain that both parties gain as a result of voluntary, non-fraudulent exchange.

SSEIN1 – **Explain why individuals, businesses, and governments trade goods and services.**

1. Define and distinguish between absolute advantage and comparative advantage.
2. Explain that most trade takes place because of comparative advantage in the production of a good or service.

SSEIN2 – **Explain why countries sometimes erect trade barriers and sometimes advocate free trade.**

1. Identify costs and benefits of trade barriers to consumers and producers over time.

## Time Required

Two 45-minute blocks of time – This lesson is best spread over two days to allow some of the material to sink in. .

* 1. Day One – Trading Rounds 1 and 2 with discussion of David Ricardo’s insight into the benefits of trade (or other similar discussion of the teacher’s choosing) in between.
	2. Day Two – Trading Round 3 with discussion of results and any discussion of why and how countries might restrain trade. Finish with any desired assessment.

## Teaching Materials

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| * Activity 1: Ingredient Butter (4 copies, cut apart – this will give you enough for the lesson, plus extras)
* Activity 1: Ingredient Flour (4 copies, cut apart)
* Activity 1: Ingredient Sugar (4 copies, cut apart)
* Activity 1: Ingredient Chocolate Chips (3 copies, cut apart)
* Activity 1: Ingredient Eggs (4 copies, cut apart)
* Activity 1: Ingredient Vanilla (3 copies, cut apart)
* Activity 2: Trade Summary sheet (6 copies, one per country)
* Activity 3: Individual Country Production Possibilities Schedule (1 copy, cut apart)
* Activity 4: Trading Partner Numbers (2 copies, cut apart)
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| * Timer that can be set for 3 minutes
 |
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# Classroom Procedures

Round 1

* 1. Divide the class into 6 teams which you will refer to as countries. The size of the countries is not important, but you will need **6** countries. Allow the teams to name their countries.
	2. Explain that the job of the students, as leaders of their country, is to is to feed its people. The only thing that people eat is chocolate chip cookies.
	3. Write on the board or display the following “Recipe” for Chocolate Chip Cookies and make sure students understand that in order to make chocolate chip cookies for their people, all ingredients are necessary!

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| Chocolate Chip Cookie Recipe |
| Item | **Amount** |
| Butter | 2 |
| Flour | 2 |
| Sugar | 2 |
| Chocolate Chips | 1 |
| Eggs | 2 |
| Vanilla | 1 |

* 1. Count out the following amounts of each Activity 1: Ingredient card:

|  |
| --- |
| Round 1 Distribution |
| Item | **Amount** |
| Butter | 12 |
| Flour | 12 |
| Sugar | 12 |
| Chocolate Chips | 6 |
| Eggs | 12 |
| Vanilla | 6 |

* 1. Distribute the cards from procedure 4 randomly to each group. Do not make any attempt to be fair or distribute equal amounts of ingredients to all teams. DO, however, make sure that no team has all of the ingredients it will need to complete a batch of chocolate chip cookies.
	2. Ask if any group can feed their people. ***(If you counted correctly and distributed randomly, the answer should be no from all groups.)*** Discuss the following questions with the students:
		1. Why is no group able to feed their people? ***(No one has all the materials, some have more materials than others, etc.)***
		2. How were the resources distributed in this round? ***(Randomly)***
		3. How are resources distributed in real life? ***(Technically randomly although you could point out that geography, weather, historical choices, government choices, and changing trends play a role. Point out that different states, regions, and countries have different resources and ask the students to come up with some examples. In this lesson, some groups have more flour and butter and some groups have more eggs. In real life countries like Japan have more fish and seafood while countries like the United States have more wheat and corn. Note: This lesson focuses heavily on natural resources – not human or capital resources – so your discussion may focus on that as well.)***
		4. What does the group need to do to feed their people chocolate chip cookies? ***(They need to trade!)***
	3. Explain to the class that they will be given 3 minutes to move around the classroom and try to trade the ingredients that they have for the ingredients they need to complete a batch of cookies. If they succeed, the people of their country will be happy and erect statues in their honor. If they fail, the people of their country will be miserable and try to overthrow their leaders.
	4. Distribute one copy of Activity 2 – Trade Summary sheet to each group (or student if desired). Tell the students to record their trades as they are made on their sheet. Set the timer for 3 minutes and allow the students to begin trading.

\*\*\*\*Teacher Note: If you distributed the resources correctly in procedures four and five, there should be exactly enough ingredients in circulation to complete 6 batches of cookies. It is extremely unlikely that all of the batches of cookies will get made. Countries are allowed to make arrangements to “split” a batch of cookies if they have all the ingredients between them. Each team gets credit for half of a batch of cookies. Their people are not as happy as they would be with a full batch of cookies but not as mad as they would be with no cookies.

* 1. Once the trading time is complete have each team return to its location. Then, one by one, have each team report:
		1. Did it manage to feed its people (complete a batch of Chocolate Chip Cookies)? ***(Answers will vary, but at least 1 or 2 batches should have been made).***
		2. With whom did they trade? ***(Answers will vary, but follow up with each group to figure out why they made the trades they did).***
		3. What did they get? ***(Answers will vary, but focus the discussion on the fact that everyone was looking for ingredients they did not have – much like countries do in real life.)***
		4. What did it cost them? ***(You may choose to focus more on the math side of this lesson and even calculate the terms of trade, but it is not necessary. In theory, butter, flour, sugar, and eggs should all trade with each other 1-1. Chocolate chips and vanilla should trade 1-1 with each other. If butter, flour, sugar, or eggs are traded for chocolate chips or vanilla, the trade should be 2-1. The students may or may not use these numbers, but that should be what happens.)***
	2. Congratulate the teams that fed their people and possibly award prizes if desired. *Collect all the ingredients – very important!*
	3. Explain that each country has decided to specialize and narrow down the ingredients they are able to produce to just two. Distribute to each team the Activity 3: Individual Country Production Possibilities Schedule that corresponds to their country. Tell them they are not supposed to share their information with other groups. Tell the students to graph a Production Possibilities Curve that corresponds to the information on their card. Circle around to check that students are accurately drawing their PPCs. They should look like this if correct (axes do not matter):

Country 1:

Country 2:

Country 3:

Country 4:

Country 5:

10

8

6

4

2

0

Country 6:

* 1. Explain to the class that each country can choose a point on its PPC (which corresponds to one row on its Activity 3 Card) which will represent the combination of goods it will produce and then use to trade. Give the teams a few minutes (1-3 minutes) to discuss amongst themselves what combination will be best for them. Do not let them see the cards from other teams or tell them any additional information about who can produce what.
	2. Once all of the countries are ready, collect the Activity 3 - Individual Country Production Possibilities Schedules and provide each country with the ingredients that correspond with the choice that they made. You will need to have all of the ingredient cards available at this point (even though it is unlikely that all will get used). For example, if Country 1 AND 2 decide to produce ONLY butter, you will need 30 butter cards.
	3. Once the countries all have their ingredients, allow them to trade once again. Set the timer for 3 minutes. Again, have them keep track of the trades they make on the Trade Summary Sheet, this time for round 2.

\*\*\*\*TEACHER NOTE: The best possible choices are below. If these choices are made, there will be enough ingredients to make 10 batches of cookies. This is possible through specialization because countries are using their resources in the best possible way. This is outcome is very unlikely, however, in this round.

* + 1. Country 1 – 20 butter, 0 flour
		2. Country 2 - 0 butter, 20 flour
		3. Country 3 – 20 sugar, 0 chips
		4. Country 4 – 0 sugar, 10 chips
		5. Country 5 – 20 eggs, 0 vanilla
		6. Country 6 – 0 eggs, 10 vanilla
	1. Once the countries return to their location, discuss the following:
	2. How many countries were able to feed their people? (complete a batch of Chocolate Chip Cookies)? ***(Answers will vary, but there SHOULD be more cookies made this round, but probably not 10 batches. If the answer was the same OR worse than the first round, point out that they had more information this round AND you had enough materials in circulation to make 10 batches.)***
	3. With whom did they trade? ***(You can ask this to multiple groups. The point of the discussion is you are trying to get the students to understand that some countries had certain items and were specializing in those items. For example, only Countries 1 and 2 make butter so butter had to come from one of those initially.)***
	4. What did it cost them? ***(Just like earlier when you asked, you are trying to get students to realize the terms of trade. If students are not trading items according to the correct terms (i.e. 1 butter for 1 flour or 2 eggs for 1 vanilla) then ask students why not. It may be because of personal relationships, other incentives offered, lack of concern or effort, not understanding the math, etc).***
	5. Were there any items that were exceptionally hard to get? ***(This will vary period to period, but likely there will be some item that is more scarce because a country like country 1 will decide to produce butter and flour and, thus, butter will be scarce. Point out that when countries don’t produce what they are good at, resources don’t get distributed in the most efficient way and things get wasted.)***
	6. Finally, ask if there’s anything else students need that would help them get 10 batches of cookies produced. ***(Discuss whatever answers they give, but make sure someone says that they need to know what everyone else is producing in order to help make better decisions in their own country.)***
	7. Congratulate the teams that fed their people. ***Collect all the ingredients.***
	8. Tell students that, just like in real life, some of the countries in the room are better at producing some products than others. Ask Country 1 how much butter they can produce if they produce nothing other than butter (no flour). ***(The answer is 20).*** Ask if any other group can produce 20 ***(No, no other group can produce that much butter).*** Explain that this concept is called **absolute advantage.** Absolute advantage occurs when one party can produce more of a given good or service.
	9. Ask countries 5 and 6 how much vanilla they can produce. ***(Both can produce 10).*** Explain that in this situation, neither country has absolute advantage. Ask who should produce vanilla. ***(Answers will vary and students are likely to say things like maybe both should produce 5, etc).*** Explain that to figure out who should produce vanilla, you need to figure out who has **comparative advantage.** Explain that comparative advantage means a party can produce a good or service at a lower opportunity cost compared to another country.
	10. Explain comparative advantage to students using whatever method you choose but DO NOT USE THE COUNTRY data as students should try to figure that out on their own. Some teachers like to focus on the math while other like to focus only on the concept of specializing. This video clip from Crash Course economics is a great starter video for the topic: <https://www.youtube.com/watch?v=NI9TLDIPVcs> If you need an example, use the following:
		1. Assume Joe and Jane building a house and need rooms painted and carpeted and they have x hours to do this.
		2. In the time they have, Joe can paint 2 rooms or carpet 2 rooms. Jane can paint 4 rooms or carpet 2 rooms.
		3. For Joe, 2paint = 2carpet. Therefore, his opportunity cost of painting 1 room is carpeting 1 room. It’s one to one base purely on ratios.
		4. For Jane, 4paint=2carpet. Therefore, her opportunity cost of painting 1 room is carpeting ½ a room. (If she carpets 1 room she gives up paining 2 rooms). Again, it’s just ratios.
		5. If they are trying to get the most out of their time, then Jane should specialize in painting while Joe specializes on carpeting.
	11. Ask why the students weren’t able to fully utilize their comparative advantage in the last round. ***(They didn’t know what other groups were doing).*** Explain that you are now going to give them a little more information that should help them make a better decision.
	12. Distribute Activity 4 – Trading partner cards. Give each country the card that has their country AND their closest trading partner on it. So, country 1 should get the card that has country 1 and 2. Country 2 should ALSO get the information for 1 and 2. Each country has the exact same production possibilities, but now they know the production possibilities for at least one other country as well. You may also allow countries 1 and 2 to work together to decide which production choice is best for both of them. Do the same for countries 3 and 4 and 5 and 6.
	13. Tell each country they have 2 minutes to decide where on their OWN production possibilities curve they would like to produce, given the new information they possess. After 2 minutes, have each country return to their desks, walk around to each group and distribute the amount of materials they have decided up.

\*\*\*\*Teacher note: In theory, every team should completely specialize according to the list on the teacher note in step 14. For reasons listed below, however, this sometimes does not happen and this is okay.

* 1. Tell the students they are going to have one more round to trade. Remind them of the goal – get at least one batch of chocolate chip cookies made for their people. They will have 3 minutes to trade. Answer any final questions, set the timer for 3 minutes and commence trading. Again, have each country keep track of the trades it makes on their Trade Summary Sheet.

\*\*\*\* Teacher note: To increase the stakes here, you may want to offer an incentive like any group that makes chocolate chip cookies for their people will get actual chocolate chip cookies or candy or some other reward.

* 1. After 3 minutes have each country return to their home location and discuss the following:
1. How many countries were able to feed their people? (complete a batch of Chocolate Chip Cookies)? ***(Answers will vary, but there SHOULD be more cookies made this round than in the other rounds. If everything goes perfectly, there should be 10 batches of cookies made.)***
2. With whom did they trade? ***(You can ask this to multiple groups. The point of the discussion is you are trying to get the students to understand that some countries had certain items and were specializing in those items. For example, only Countries 1 and 2 make butter so butter had to come from one of those initially.)***
3. What did it cost them? ***(Just like earlier when you asked, you are trying to get students to realize the terms of trade. If students are not trading items according to the correct terms (i.e. 1 butter for 1 flour or 2 eggs for 1 vanilla) then ask students why not. It may be because of personal relationships, other incentives offered, lack of concern or effort, not understanding the math, etc).***
4. If less than 10 batches of cookies are made, ask why this might be the case. ***(Possible reasons include misuse of math; students not trusting each other and trying to produce extra materials “just in case;” mis-identification of comparative advantage; not wanting to trade with other groups; arguments over terms of trade; miscalculation of comparative advantage, etc.)***
	1. Go over with students what each group should have done and why. ***(Country one should have made only butter, country 2 should make only flour, country 3 only sugar, country 4 only chips, country 5 only eggs, and country 6 only vanilla. This is because for each country, this is the good they could produce at the lowest opportunity cost compared to the other country that was making the same products.)***

Conclusion

* 1. Conclude the activity by explaining to students that with specialization and free trade, more cookies were able to be produced and more people around the world were fed. The entire point of standards EF3 and EIN1 is that parties gain when they trade and trade is made possible largely through specialization.
	2. Ask the students why, if everyone knows this, it doesn’t work in the real world. Encourage students to compare their actual experience in the simulation to real world events. ***(Just like in the classroom, some countries don’t trust one another or want to work together even if it could be mutually beneficial (getting sugar from Cuba, for example); comparative advantage is not always perfectly clear in the real world (the US exports oil and imports oil, for example); sometimes decisions are made because of political or military reasons instead of economic reasons; in the real world, there are millions of individual actors with various incentives making personal decisions)***
	3. Finally, wrap up the lesson by previewing trade barriers. How would this activity have been different, for example, if country 1 had put limits on the amount of butter it would export? ***(The price of butter would have been higher, the global amount of cookies would have been reduced, etc.)***

Activity 1 – Ingredient: Butter

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Activity 1 – Ingredient: Flour

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Activity 1 – Ingredient: Sugar

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Activity 1 – Ingredient: Chocolate Chips

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Activity 1 – Ingredient: Eggs

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Activity 1 – Ingredient: Vanilla

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Activity 2: Trade Summary Sheet

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| Team # \_\_\_ Trade Summary Sheet |
| Round #1 |
| Trade Partner | Item Obtained | Quantity | Item Traded | Quantity |
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| Round #2 |
| Trade Partner | Item Obtained | Quantity | Item Traded | Quantity |
|  |  |  |  |  |
|  |  |  |  |  |
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| Round #3 |
| Trade Partner | Item Obtained | Quantity | Item Traded | Quality |
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Activity 3 – Individual Country Production Possibilities Schedule

|  |
| --- |
| Country 1 |
| Butter | Flour |
| 20 | 0 |
| 16 | 2 |
| 12 | 4 |
| 8 | 6 |
| 4 | 8 |
| 0 | 10 |

|  |
| --- |
| Country 2 |
| Butter | Flour |
| 10 | 0 |
| 8 | 4 |
| 6 | 8 |
| 4 | 12 |
| 2 | 16 |
| 0 | 20 |

|  |
| --- |
| Country 3 |
| Sugar | Chips |
| 20 | 0 |
| 16 | 2 |
| 12 | 4 |
| 8 | 6 |
| 4 | 8 |
| 0 | 10 |

|  |
| --- |
| Country 4 |
| Sugar | Chips |
| 10 | 0 |
| 8 | 2 |
| 6 | 4 |
| 4 | 6 |
| 2 | 8 |
| 0 | 10 |

Activity 3 – Individual Country Production Possibilities Schedule (cont’d)

|  |
| --- |
| Country 5 |
| Eggs | Vanilla |
| 20 | 0 |
| 16 | 2 |
| 12 | 4 |
| 8 | 6 |
| 4 | 8 |
| 0 | 10 |

|  |
| --- |
| Country 6 |
| Eggs | Vanilla |
| 10 | 0 |
| 8 | 2 |
| 6 | 4 |
| 4 | 6 |
| 2 | 8 |
| 0 | 10 |

Activity 4: Trading Partner Numbers

|  |  |  |
| --- | --- | --- |
| Country 1 |  | Country 2 |
| Butter | Flour |  | Butter | Flour |
| 20 | 0 |  | 10 | 0 |
| 16 | 2 |  | 8 | 4 |
| 12 | 4 |  | 6 | 8 |
| 8 | 6 |  | 4 | 12 |
| 4 | 8 |  | 2 | 16 |
| 0 | 10 |  | 0 | 20 |

|  |  |  |
| --- | --- | --- |
| Country 3 |  | Country 4 |
| Sugar | Chips |  | Sugar | Chips |
| 20 | 0 |  | 10 | 0 |
| 16 | 2 |  | 8 | 2 |
| 12 | 4 |  | 6 | 4 |
| 8 | 6 |  | 4 | 6 |
| 4 | 8 |  | 2 | 8 |
| 0 | 10 |  | 0 | 10 |

Activity 4: Trading Partner Numbers (cont’d)

|  |  |  |
| --- | --- | --- |
| Country 5 |  | Country 6 |
| Eggs | Vanilla |  | Eggs | Vanilla |
| 20 | 0 |  | 10 | 0 |
| 16 | 2 |  | 8 | 2 |
| 12 | 4 |  | 6 | 4 |
| 8 | 6 |  | 4 | 6 |
| 4 | 8 |  | 2 | 8 |
| 0 | 10 |  | 0 | 10 |

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