

SPECIALIZATION, PRODUCTIVITY, INTERDEPENDENCE

5

Division of Labor



**SPECIALIZATION AND DIVISION
OF LABOR INCREASE PEOPLE'S
PRODUCTIVITY AND
DEPENDENCY ON ONE ANOTHER.**



**Economics
Arkansas**

EDUCATION FOR REAL LIFE

CONCEPT STATEMENTS FOR ELEMENTARY ECONOMICS

1. People consume goods and services to help satisfy their wants.
2. Resources are used to produce goods and services.
3. Because many things are scarce, people need ways to allocate them.
4. Scarcity requires people to make choices that involve trade-offs and have opportunity costs.
5. **Specialization and division of labor increase people's productivity and dependency on one another.**
6. People are willing to make exchanges when what they receive is worth more to them than what they give up.
7. Money makes trading easier.
8. The price of a good, service, or resource is determined by buyers and sellers in that market.
9. People earn income when they sell their resources.
10. People incur expenditures when they buy goods and services.
11. Entrepreneurs and businesses incur costs when they buy resources and earn revenues when they sell the goods and services produced with those resources.
12. Governments provide goods and services and collect taxes.

SPECIALIZATION AND DIVISION OF LABOR INCREASE PEOPLE'S PRODUCTIVITY AND DEPENDENCY ON ONE ANOTHER.

SPECIALIZATION: when a resource is used to do one or only a few things

Examples:

- ❖ a student playing one instrument or sport
- ❖ teachers focusing on one grade level or subject
- ❖ welders welding
- ❖ doctors concentrating on one organ or a few diseases
- ❖ machines performing one task
- ❖ land that is best suited for growing a particular crop

DIVISION OF LABOR: organizing production into a series of separate tasks with workers specializing in doing one of the tasks

Examples:

- ❖ assembly line production
- ❖ making a sub at a sandwich shop
- ❖ building a house (concrete workers, carpenters, electricians, "sheet rockers," painters)

PRODUCTIVITY: amount of goods or services produced by a resource in a given amount of time

Examples:

- ❖ car washes per hour by a teenager
- ❖ meals prepared per hour by a cook
- ❖ t-shirt logos per day by a printing machine
- ❖ tons of rice per year by a field (crop yield)

INTERDEPENDENCE: people depending on each other for resources, goods, and services

Examples:

- ❖ opposite of being self-sufficient (while people could produce all their own goods and services, most would not have the necessary resources or knowledge to do so)
- ❖ people depending on farmers for food
- ❖ phone producers depending on rare minerals from China
- ❖ surgeons depending on nurses in an operating room

Concept Statement Examples

- ❖ The more John concentrates on painting (specialization), the more tricks and techniques he learns, and as a result, the more rooms he is able to paint each day (increased productivity).
- ❖ At busy sandwich shops, a sandwich is often made by passing it down a line of people (division of labor). One person gets the bread desired, the next person puts on the meat and cheese, the next person adds vegetables and sauces, and the last person wraps it. By having specialists at each step (specialization), more sandwiches can be made (increased productivity) than if one person had to move around and do all of the tasks. Each person is dependent on everyone doing their job (interdependence).

GETTING STARTED

- ❖ Divide the students into small groups. Each group will create a list of the people who work in their school. As the groups share their list, create a large group chart listing the job that each worker performs. Examples may include cooks, secretaries, custodians, teachers, bus driver, principal, etc. Explain that these people are called specialists. While they each specialize in doing one thing, they are needed altogether to produce education.
- ❖ Ask: Is there any way that I (the teacher) can cook lunch, answer the office phone, clean the restrooms, AND teach you at the same time? Explain that since one person cannot do it all, we depend on others. This is called interdependence--people depending on each other to produce goods and services.
- ❖ Discuss the illustration on the front cover: These specialists are working together to produce one good--a car. When two or more people work together to produce the same good it is called division of labor or, as is shown, a separation of work into specialized tasks. Ask: Do you think more cars will be produced using division of labor? Have them explain their answer.
- ❖ **Extension:** Show and discuss *How a House is Built* by Gail Gibbons. This provides excellent examples of the concepts developed in this guide.

USING SPECIALIZATION IS ALL AROUND US

(Enlarge for whole group instruction. Copy and use for small group and individual activities, home/school connections, and assessments.)

- ❖ Describe specialization as using a resource in one or only a few different ways. Explain that one person could design, engineer, order parts, weld, bolt, assemble, and paint to produce a car, but each of these tasks are usually done by a person or machine concentrating on only doing that one task.
- ❖ Have students give examples of both people and machines that do specialized tasks and describe the good or service that they produce. (*Examples: heart surgeon/heart operations; grocery store bagger/bagging services; combine/harvesting crops; robotic welder/cars*)
- ❖ Option 1: Go on a “Specialization Search” around the school. Students can complete the activity sheet while on the tour or when they return to the classroom. Remind students to look for both human and capital resources that do specialized tasks. (*Possible human resources: teacher/guiding student learning; cafeteria cook/preparing food; nurse/providing medical aid; custodian/cleaning the building. Possible capital resources: copy machine/making copies; oven/cooking food; bus/transporting students.*)
- ❖ Option 2: Have students complete the activity sheet at home. Assign them various settings (other than at school) to identify specialized human resources. For example: at home (*jobs of parents, siblings, uncles/aunts, grandparents*); at a restaurant (*waiter, cook, hostess, table cleaner*); in their neighborhood (*mail carrier, police officer, firefighter, utility worker*); at a grocery store (*cashier, stock person, butcher, baker, bagger*)
- ❖ Option 3: On a field trip to a factory (or after a video of a manufacturing process), have students use the activity page to record various machines they see and describe the specific task each machine performed.

USING I AM A SPECIALIST

(Enlarge for whole group instruction. Copy and use for small group and individual activities, home/school connections, and assessments.)

- ❖ Explain that when people specialize in a task they may wear special clothing and/or use specialized tools (capital resources). They also become dependent on other specialists to do their tasks.
- ❖ Option 1: Assign or have each student identify a specialist. Using the activity page, each student will add features (clothing, tools) that will identify their specialist. Share with the class.
- ❖ Option 2: Assign each student a community specialist. Students will write the name of their specialist within the outline and cut it out. Have students in turn describe what their specialist does. As each one is shared, tape hand-to-hand to form an interdependence chain. When all specialists have been shared, hold up the chain. Tell the students that this represents specialists in our community. Students will understand that we are dependent on the specialists around us. State that interdependence occurs when people depend on each other to provide the goods and service we want.
- ❖ Option 3: Have students interview a specialist. This can be a family member or someone from the community. Possible questions: What do you specialize in doing? What (if any) special clothing do you wear? What specialized tools or equipment do you use? What do other specialists that you work with specialize in doing? Have students draw a picture of their specialist using the outline on the activity page. They should include any special clothing and tools used by their specialist. On the back, have them write a paragraph describing what their specialist does and how she works with other specialists to produce the good or service that they produce.

TEACHER THOUGHTS

1. Specialization applies to all resources, not just human resources. Machines (capital resources) are often designed for very specific tasks (stamping, printing, bending, etc.) and land (a natural resource) is often better suited for growing one crop (corn in Iowa) than it is for another (oranges).
2. There is an old adage: “Jack of all trades, master of none” (where “trades” refers to tasks or occupations). This means if someone is trying to do everything, they are not likely to be very proficient (i.e. very productive) at anything. By specializing, people become “task-masters” and more productive individually and as a group.
3. Specialization means a person does not produce many of the goods and services they might want. They are dependent on others for those goods and services, as others are dependent on them for what they produce. This mutual dependence naturally leads to a desire to trade.

SPECIALISTS AND THEIR SPECIALIZED TOOLS

Collect tools (specialized capital resources) people use in their jobs and place in large plastic storage bags. See suggestions. Select the bag containing stethoscope, mask, gloves and syringe. Show and discuss the contents with the class. Have the students identify a specialized human resource that might use these tools (doctor, nurse). Discuss how specialists use specialized tools when producing goods and services. Divide the students into small groups to explore the other bags, one bag per group. Allow time for students to examine and discuss the contents of their bag. Bring the groups together and discuss what specialist might use these tools.

Suggestions for bags filled with specialized tools:
Photographer: photo album, camera, picture frame
Cook or baker: pan, spoon, rolling pin, spatula
Teacher: books, pointer, calendar, marker
Doctor or nurse: stethoscope, mask, gloves, syringe
Office worker: cell phone, calculator, laptop, pen
Hair stylist: curling iron, hair dryer, brush, scissors
Gardener: watering can, cutters, gloves, hand spade
Carpenter: tape measure, saw, hammer, work gloves
Dentist: tooth brush, mirror, floss, dental tool
Artist: paintbrush, pallet, stirring sticks, canvas

THE MATH OF SPECIALIZATION

- ❖ Show table and relate the following: Producing a widget requires two tasks, A and B. It takes Jack 4 hours to do task A and 8 hours to do task B, while it takes Jill 8 hours to do task A and 4 hours to do task B. So, in 12 hours each of them can produce one widget for a total of 2 widgets.
- ❖ Ask: Which person is best at each task? (*It takes Jack less time to do task A and Jill less time to do task B.*)
- ❖ Working in small groups have students answer the following: If Jack and Jill specialize at the task they do best and work together, how many widgets could they produce in 12 hours? (*Jack could complete task A three times, while Jill could complete task B three times, so they would end up with 3 widgets.*)
- ❖ Next announce that due to specializing in one task both Jack and Jill can now do their tasks in only 3 hours rather than 4 (cross out each “4” in the table and write in a “3”).
- ❖ Ask: Now how many widgets can they produce in 12 hours? (*Each of them could complete their tasks four times, so they could produce 4 widgets together.*)
- ❖ State: By dividing their labor, Jack and Jill multiplied their total production by two! Discuss.

| | Task A | Task B |
|------|---------|---------|
| Jack | 4 hours | 8 hours |
| Jill | 8 hours | 4 hours |

DISCUSSION OR WRITING PROMPTS

- ❖ Provide examples of how people’s work has become more specialized over time.
- ❖ Write a story about a day without specialists.
- ❖ Describe an example of division of labor you have seen.
- ❖ Write a thank-you letter to a specialist in the school.

SPECIALIZATION IN NATURE

Connect your study of specialization to science by studying the special jobs bees perform in their colonies. Read *Flight of the Honey Bee* by Raymond Huber and Brian Lovelock to learn how Scout, a worker bee, locates nectar and communicates the location of the nectar to other bees in the colony. Further study of bees’ specialized behavior can be found at “All About Bees” (<https://www.nea.org>).



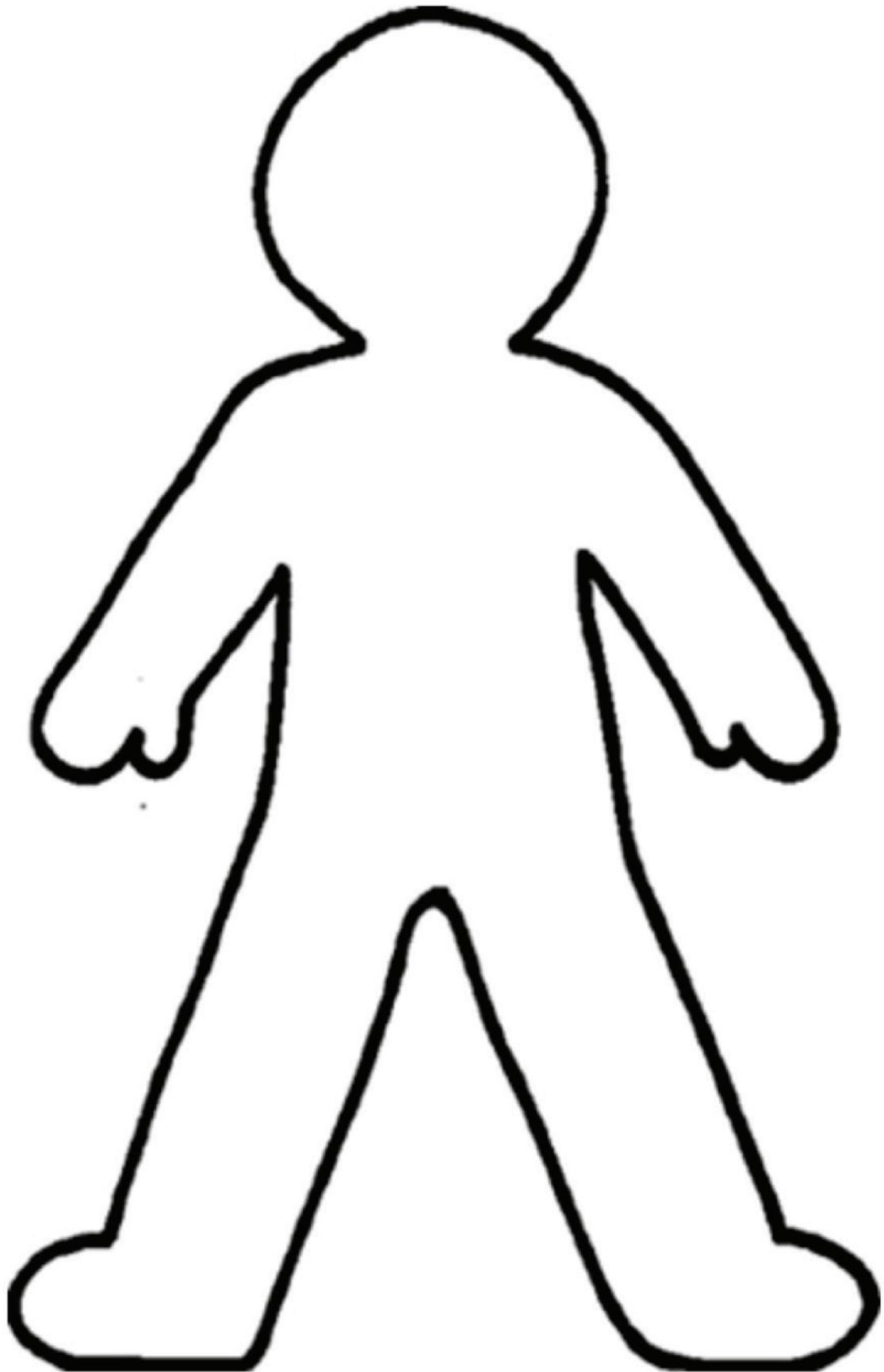
LITERATURE & ONLINE CONNECTIONS

- ❖ Scan the QR code above or go to www.economicsarkansas.org Click on *For Teachers - Grab & Go Economics - Online Connections*

SPECIALIZATION IS ALL AROUND US

| Specialized Resource | Description of Specialization |
|----------------------|-------------------------------|
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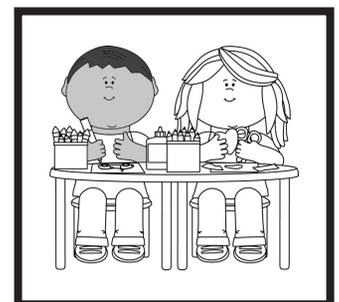
I AM A SPECIALIST



PRODUCING TOGETHER

| PRODUCTION RECORD | | | |
|-------------------|-------------------|--------------------------|---------------------------------|
| | Number of Workers | Number of Items Produced | Productivity (Items per Worker) |
| Round 1 | | | |
| Round 2 | | | |
| Round 3 | | | |

Comments:



USING PRODUCING TOGETHER

[Note: Draw horizontal lines 3/4ths of an inch apart on a standard-size piece of paper to make “strips” (15 per page). Each student will need: one page of strips, a copy of the activity page, a pair of scissors, a pencil, and a glue stick.]

- ❖ Tell the class that they are going to investigate different ways of producing things by playing the role of workers. Describe what is going to happen: There will be three production rounds each lasting about one minute. During each round you will be asked to produce as many paper chain links as you can according to the instructions given. After each round you will be recording your production results.
- ❖ Tell students that in order to produce each link they need to do three things: cut out a strip, write on it “Link #1” (“Link #2,” “Link #3,” etc.), and glue the link and attach it to their chain. Demonstrate this process by making a paper chain of at least three links. Answer any questions.
- ❖ Give each student a sheet of “strips,” a copy of the activity page, a pair of scissors, a pencil, and a glue stick.
- ❖ For each round: Read the round instructions, ask if there are any questions, allow students one minute to work, and have them record the results on their PRODUCTION RECORD (only completed and attached links count). *(Number of Workers will be one in Round 1 and three for Rounds 2 and 3; Number of Items Produced will be the number of completed links produced by each student in Round 1 and the number completed by the student’s group of three in Rounds 2 and 3; Productivity will be the Number of Items Produced divided by the Number of Workers in all rounds)* Complete and record each round before moving on to the next round. Collect all chains and links after each round.

Round 1

Students will work individually doing all three steps (cut, write, attach) of making a link. Instructions: Remember to do each of the three steps. Make the longest chain you can.

Round 2

Form assembly lines of three students each and assign each student one of the three tasks. The first student will cut out strips, the second student will write the link number, and the third student will attach the link. Have all students in the group give the first student all remaining portions of their sheets of strips from Round 1. (Teacher hint: Rounds 2 and 3 can be run for a little more than one minute to account for the delay in getting the students who are writing and attaching links started in the process and to reinforce results.)

Instructions: Work as a group. Make the longest chain you can.

Round 3

Repeat everything in Round 2.

- ❖ Have each student write how productivity changed from round to round in the “Comments” section.
- ❖ Discuss how productivity changed from Round 1 to Round 2 and why. *(Likely increased; Due to the division of labor, students were able to specialize on doing one task which likely helped them to do it faster, however, an assembly line is only as fast as the slowest worker so there could have been some bottlenecks in the process slowing things down.)*
- ❖ Discuss how productivity changed from Round 2 to Round 3 and why. *(Likely increased; By specializing on one task, students likely got better at doing their task and coordinating with the other workers in their group.)*
- ❖ Describe how modern production processes employ division of labor, such as, specialized workers and machines along an auto assembly line or workers making a sub at a sandwich shop. Ask: Why do you think they do that? *(To get more goods from the same amount of resources, i.e. increase productivity)*