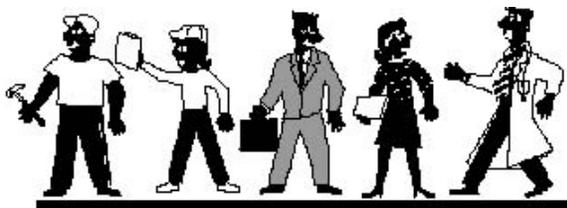


## The Journey Inside<sup>SM</sup>: Technology and Society Student Handout: Inventions That Have Changed the World

### Inventions That Have Changed the World

Every so often someone invents a product that affects people throughout the world. Most people will easily identify the telephone, the automobile, and the airplane as inventions that have had tremendous impact on the way people do things, the way jobs are done, and the way people interact.



Books are another such invention. Six hundred years ago, all books were copied by hand. Only the rich and powerful could afford them. A book cost more than an ordinary worker earned in a year. Most people were dependent on someone else to learn new things. The invention of the printing press allowed the mass production of books. Books became cheaper. People could own books on whatever subject they wanted. They could learn by reading.

Think about your great-grandparents when they were children. Think how long-distance travel for them was different from the way you might make a long trip. They probably traveled by horses or perhaps horse and buggy. They often had no real road to use and certainly didn't find a motel conveniently located at the end of each day's travel. The dangers they faced were very different from the dangers you might face traveling long distance by car, bus, or train today.

You may have already experienced your first airplane trip. But, even 50 years ago, travel by airplane was limited and expensive. Such travel was done mostly by adults and usually by those people with quite a lot of money. For many people today, travel between distant cities or countries is routine. A 700-mile trip for your great-grandparents would certainly have been very different than yours would be. You could travel to a completely different country by airplane in less time than your great-grandparents could travel 700 miles.

Your grandparents communicated with distant friends and relatives by writing letters. The news of a birth or a death in their family might take weeks to reach other family members. You have access to a telephone and can reach almost anyone in the world quickly and easily.

### Activities

1. Suppose that there was only one book per classroom for any subject. Identify ways that would allow everyone in the class to learn the information that is in the book. Estimate how much time it would take for every member of the class to learn one new concept under these conditions. What method can you suggest that would provide a reasonably fast way of doing the learning? (By the way, no computers or "modern" technology allowed.)

2. Electric motors are in many common devices that you use in your home and at school. There are tiny motors in such things as hair dryers; there are larger motors in such things as vacuum cleaners. List other devices that use similar electric motors.

Imagine a world without electric motors. How would your day-to-day life be different? For example, describe or illustrate in picture form your routine for getting ready for school in the morning. (Since you just lost your hair dryer, bad hair days are allowed.) Identify other parts of your day that will have to change since you are now without any electric motors.

3. Consider artificial lighting. The ability to extend the normal hours and accessibility of natural daylight has affected the way schools are designed. Look around your classroom. If there were no artificial lights available in the school, would the classroom have to be designed differently? Would the school day have to change?

Turn off all the lights in the classroom. Pretend that the idea of artificial lighting is unavailable to you or anyone else in the world. (Someone neglected to invent it.) Other than this major loss, pretend that you still have electricity and other electrical devices. You can have electric clocks, stoves, tape decks, and so on. Look around you and decide what kind of activities you do at school that would need to change. Test to see if you can read books with the amount of natural light available in the classroom. Can you read the writing on the blackboard? By changing where you sit, can you find a place in the room where you can comfortably read? Is the light sufficient for you to clearly see another person's face regardless of where they stand in the classroom? Test to find the maximum distance between you and someone else that allows you to see each other clearly.

Think about your home life without any artificial lighting. How might your activities at home be different? Would your sleeping pattern change? Why or why not? Would there be any changes in the way the house or apartment has been constructed? Would your daily schedule be the same in December as it is in July?

4. Suppose that you are going to host a birthday party and your job is to make the birthday cake, prepare hamburgers, and supply cold drinks. If you cannot use any electricity and you are not allowed to merely go purchase the needed food, identify the tools you would need to complete this task. For example, to make the cake, you might have planned to use an electric mixer. What do you use instead? The cake needs to be baked. What can you substitute for the kitchen oven? The drinks need to be cold. Oops, no refrigerator. What do you do? Address any other adjustments you would need to make in getting the food ready to eat.