

The Railroad

Make a picture train using various shapes.

OBJECTIVES

Students will:

- Ī describe three parts of an engine
- Ī name at least three jobs people performed on a train
- Đ identify one railroad that operated in Kansas

MATERIALS FROM TRUNK

Video

Here Comes a Train

Objects

Fabric panel

Railroads in Kansas

Coal

Worksheet

#8a & b - Train

OTHER MATERIALS

- ' VCR/VHS machine
- ' Television
- ' Glue and scissors
- ' Black and yellow markers or colors
- ' Colored paper (use a variety of colors including black)
- ' One piece of light colored paper about 11" x 14" per child

TEACHER PREPARATION

- ' Photocopy worksheet #8a onto colored paper, one per child. This is the train minus its wheels. Use a variety of colors. Construction paper trimmed to 8 ½" x 11" and run through a photocopy machine produces brightly colored trains.
- ' Make a copy of worksheet #8b, cut the pieces out, and use the pieces as templates to trace the shapes onto black paper.
- ' Cut the train pieces apart and stack them together (all boilers in one stack, all smokestacks in another, etc.) This will allow them to be handed out piece by piece more easily.



- ' By using a variety of colors and then cutting the pieces apart each child can make a multicolored train.
- ' Set up the television and VCR.
- ' Hang the fabric panel where it can be seen by the entire class.

HISTORICAL BACKGROUND

The Railroad in Kansas History

When Kansas became a state on January 29, 1861, only five miles of railroad track lay within the state's boundaries. By the early 1870s two railroads had crossed the state: the Kansas Pacific in 1870 (originally known as the Union Pacific, Eastern Division) and the Atchison, Topeka, and Santa Fe Railroad in 1873. Many other railroads also laid track in Kansas during the late 1800s including the Rock Island, the Missouri Pacific, and the Katy (Missouri, Kansas and Texas). These railroads played a major role in the early settlement and development of Kansas.

Although the Kansas Pacific was the first railroad to cross the state, it was the Atchison, Topeka, and Santa Fe Railroad that played the greater role in developing Kansas. Chartered by the Kansas territorial legislature in 1859, the Santa Fe received a land grant from the United States Congress in 1863. This grant gave the railroad federal land with the stipulation that the track be laid the entire length of the state of Kansas by March 3, 1873. Failure to reach this objective on time would cause forfeiture of the federal land given to the railroad in the grant.

Construction, however, did not begin until 1869 leaving less than half of the allotted time to build the railroad across the state. By 1870 the Atchison, Topeka, and Santa Fe Railroad had reached Emporia. The following year brought them to Newton. With little time left to complete the track across the state, crews began building west out of Newton. Driven by necessity, railroad crews worked through the heat of summer and the chill and snow of early winter to arrive at what they thought was the Colorado border on December 22, 1872, nearly two and a half months ahead of schedule.

However, government officials ruled that the Atchison, Topeka, and Santa Fe Railroad had not reached the Colorado border located four miles further west. With celebrations already begun and all available track already used, railroad officials rounded up the celebrating crews and tore up track used on sidings. Six days later on December 28, 1872, the Atchison, Topeka, and Santa Fe Railroad officially crossed the Colorado border with five yards to spare.

Construction of the railroad influenced the location of towns and often impacted their growth or demise. Towns sprang up along the tracks as railroad construction moved west. With the new towns came settlers, farmers, shopkeepers, and laborers. The railroad, the same entity that had



created the towns, became the lifeline that tied the people in these towns to the rest of the country. The trains heading west brought in supplies and delivered the mail to the new towns while trains heading east shipped out the crops grown on the new farms.

As the years went by the railroad played a less obvious role in the life of Kansas communities. With the development of the automobile, people no longer depended on train transportation to get from one town to another. It became cheaper to ship some items by truck rather than by rail. Other changes came to the railroad as well. The economical diesel locomotives replaced the romantic steam engines in the 1950s and 1960s.

Nonetheless, trains and railroads continue to play an important part in the lives of Kansans. Large coal trains pass through our state on a daily basis. Each harvest season, grain cars line up at local elevators to load the year's wheat, milo, and corn crops. Amtrak, the nation's last major passenger service, carries travelers to varied locations across the country. In some areas of the state local recreational trains, called excursion trains, carry passengers who just want to experience what train travel was once like. There may be excursion trains in your area of the state.

How Trains Work

Originally trains were pulled by large steam locomotives, commonly called "iron horses." These large self-propelled machines did the work that horses normally did. The steam engines, or locomotives, were large boilers on wheels. A firebox underneath the water compartment heated water in the boiler. The hot water became steam. The pressure that built up as more and more steam was created moved the cylinders that powered the drivers that turned the wheels. It was this process that moved the train down the track.

Other parts of a steam engine essential to its operation included the cowcatcher, the whistle, the bell, the headlight, the sand dome, and the smokestack. The **cowcatcher** was in the front of the engine down near the tracks. It moved objects out of the path of the train. The steam powered **whistle** sitting on top of the engine could be heard long distances down the track. It was used to warn people to get off the track, let other trains know that a train was coming down the track, and signal people waiting at the depot that the train would be arriving soon. The **headlight** was a light located in the front of the engine. It helped the engineer see in front of the train at night and allowed people down the track to see the approaching train. The **sand dome** was a large container that sat on top of the boiler. It stored a large amount of sand. This sand could be sent down a tube that put sand on the track just in front of the wheels. This helped the wheels get traction when the track was slick or icy. The **smokestack** was a cylindrical shaped object that also sat on top of the boiler. From this "chimney" smoke from the burning coal or wood billowed out.

The tender is the first car behind the steam engine and is actually an extension of the engine. It carried a supply of fuel and water. The fuel, coal or wood, was shoveled into the firebox on a



regular basis to keep the fire going. The water tank supplied water to keep the boiler full of water.

Other cars that followed the engine and tender included passenger, baggage, livestock, and freight cars and, bringing up the rear, the cabooses.

A number of jobs were performed on the train. The man in charge of the train was the **conductor**. His job was to make sure the train left and arrived on time. His main piece of equipment was his pocket watch. When it was time to leave, the conductor yelled, "All aboard." This told the passengers it was time to get on the train. He then gave the engineer the "highball" (go) sign, and the train would start to move down the track. Once the train was on its way, the conductor punched the passengers' tickets to show that they had been used.

Two people worked directly in the cab of the engine. The **engineer** actually drove the train. He didn't have to steer but was in charge of controlling the proper amount of steam, water, and fire in the engine. This directly affected the speed of the train. Before each trip, the engineer inspected the engine and greased the running gears. His was the top job on the train, although the conductor actually had more authority.

The second person working in the cab of the engine was the **fireman**. It was his job to keep the firebox stoked with fuel, either coal or wood. His muscles kept the fire going that created the steam to power the engine and pull the rest of the train. He shoveled many tons of fuel a day. When the train stopped, it was the fireman's job to oversee refilling the tender with fuel and water.

The **brakemen's** job was the most dangerous; it was their job to stop the train. This was done by turning a wheel on each car that applied a brake to the wheels on the track. On freight cars, this wheel was on top of the car. Brakemen had to walk a narrow catwalk on top of the car and jump from one car to the next to get to the brake wheels. It was not rare for these men to fall to their deaths on icy or windy days. Another one of the brakeman's duties was to connect or "couple" the cars. This was done by using a link and a pin. If a brakeman was not careful, he could be crushed between the cars during this process. Two brakemen worked on most trains.

Source:

Isern, Thomas D. and Raymond Wilson. *Kansas Land*



VOCABULARY

Atchison, Topeka, and Santa Fe Railroad	An important railroad company in Kansas that was originally chartered in 1859. The railroad completed its track across the state on December 28, 1872. Eventually the line extended from Chicago to California.
Brakeman	The railroad worker responsible for coupling train cars together. On early trains, he also set the brakes on each car to stop the train. He had the most dangerous job on the train.
Cab	The part of the locomotive where the engineer and fireman work.
Coach	A railroad passenger car.
Coal	A type of fuel used in steam engines.
Conductor	The railroad worker in charge of the train. He kept all the records on where the train went and what it carried. On passenger trains, he took the tickets.
Depot	The building for railroad passengers or freight. It is also called a railroad station.
Engineer	The person in charge of running the locomotive and seeing to its maintenance.
Fireman	The person who built the fire in the steam engine using coal or wood. He kept the engine supplied with enough fuel and water so it would run properly.
Freight	Items carried on board a train.
Fuel	Coal or wood burned in the steam engine.
Immigrant	A person who moves to a new location to make a new life or home for him or herself.
Passenger	A person who rode on the train.
Railroad	A form of transportation.
Settler	A person who moves to an area to help start or build a farm or town where there are no farms or towns.



Steam Engine	A railroad locomotive that was powered by steam.
Tender	The vehicle attached to the steam engine used for carrying water and fuel.
Track	The rails on which the train rides.
Train	A series of connected passenger coaches and/or freight cars pulled by a locomotive.

ACTIVITY

- 1) Explain that today the class is going to learn about trains and how trains helped build the state of Kansas.

Place the silhouette of Kansas on the fabric panel. Tell students that when Kansas first became a state, there were very few cities and very few settlers. Ask if they know what a settler is.

® *A person who moves to an area to help start or build a farm or town where there are no farms or towns.*

- 2) Place track pieces on the silhouette from east to west where indicated. Tell the class that this is fairly close to where the first railroad crossed Kansas. It was called the Kansas Pacific Railroad.



Place the track pieces from the northeast to the southwest where indicated. Explain that this was about where the second railroad crossed the state. It was the Atchison, Topeka, and Santa Fe Railroad.



Last, place people and buildings along the tracks and explain that they represent the settlers or immigrants that came to Kansas. Ask the class to guess how some of these settlers got to Kansas to start farms and towns.

® *On trains.*

- 3) Direct the students attention to the television. Explain that they are going to watch a video, *There Goes a Train*. Tell the class to watch for the following:
 - ± different jobs people on the train have, and
 - ± information about parts of trains.



After watching the video ask the class the following questions:

- ± What jobs did Dave talk about in the video? What type of work is involved with each of these jobs?
 - ® *Conductor - takes the tickets*
 - ® *Service Attendant - waits on the people in the dining car*
 - ® *Engineer - drives the train*
 - ® *Brakeman - stops the train*

- ± What is a steam engine?
 - ® *It is an engine that pulls the train. This type of engine used fuel and water to make the train run. Steam engines aren't used anymore.*

- ± What type of train replaced the steam engine.
 - ® *The diesel engine.*

- ± What is the name of the train car that carried the fuel needed to run the steam engine?
 - ® *The tender. It was the car placed right behind the steam engine.*

Explain that on trains pulled by steam engines there was always a person called the fireman. His job was not to put out fires but rather to build them and keep them going. The fire heated the water, and the steam from the hot water kept the train running. The fireman shoveled fuel (coal or wood) into the firebox in the cab of the steam engine. Show the class the piece of coal.

- 4) Have the class make a picture of a steam engine. Hand out the pieces needed as indicated below and give step-by-step instructions on "building" the steam engine. Review the train parts with the class as they construct the engine.

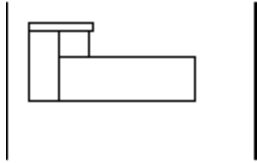
- ± Hand out an 11" x 14" piece of paper, yellow and black markers, glue, and scissors to everyone in class.



- ± **BOILER** - Have them choose their boiler, cut it out, and glue it in the center of their large sheet of paper with the curved front edge on the right-hand side.

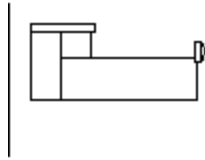
* This is the boiler of the train. The boiler has two parts, the water compartment and the firebox. The fireman kept a fire going in the firebox to heat the water. The hot water produced the steam necessary to power the train.





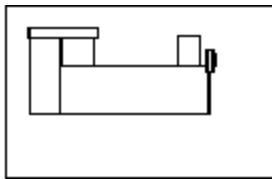
± **CAB** - Hand out the three pieces of the cab. Have the class cut them out and glue them on in numerical order (#1 then #2 then #3).

* The cab is where the engineer and fireman worked. The engineer drove the train and the firemen shoveled coal or wood into the firebox to keep the fire going.



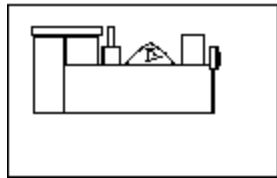
± **HEADLIGHT** - Either hand out the headlight and have students cut it out and glue it on or have them draw a headlight on with their black markers. Using their yellow markers draw light beams shining from the headlight.

* The headlight helped the engineer see in front of the train at night, and allowed people down the track to see the approaching train.



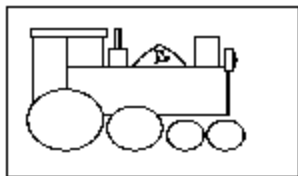
± **SMOKESTACK** - Hand out smokestack pieces. Have class cut them out and glue them directly behind the headlight. Using a black marker draw smoke coming out of the chimney.

* The smokestack provided a point of exit for smoke from the burning fuel.

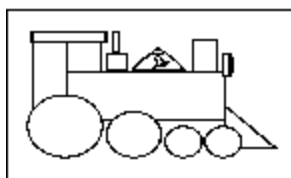


± **BELL and WHISTLE** - Hand out the bell and the base for the whistle pieces. Cut out and glue the bell directly behind the smokestack, and the whistle between the bell and the cab. Using a yellow marker draw a line for the whistle above the whistle dome.

* The whistle was steam powered. It could be heard from long distances. The whistle warned people to get off the track, let trains know that another train was coming down the track, and signaled people waiting at the depot that the train would soon be arriving.



± **WHEELS** - Hand out the two small wheels first. These get glued to the front of the engine. The medium size wheel is in the center and the largest wheel is under the cab.



± **COWCATCHER** - Hand out and have class cut out and glue to the front of the train.

* The cowcatcher moved objects off the track so the train did not run over them.



EXTENDED ACTIVITIES

- 1) Use the engineer and conductor hats to have the class roll play the different jobs on a train. Make your own train by using large boxes or setting up chairs to create the different cars.
- 2) Is there is an excursion train in your area? Plan a field trip where the students get to ride on a real train.
- 3) Use the tape, *Kids Sing America*, in the trunk to teach the class the song "I've Been Workin' on the Railroad," counter number 103.

