Understanding by Design Unit Template Guide

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| Title of Unit | Colorado Transportation | Grade Level | Intermediate  |
| Curriculum Area | Colorado Geography | Time Frame |  |
| Developed By |  |  |
| Identify Desired Results (Stage 1) |
| Content Standards  |
| History - Grade 4* Standard: 1.1 History – Organize and sequence events to understand the concepts of chronology and cause and effect in the history of Colorado.
* Standard:1.2 History – The historical eras, individuals, groups, ideas and themes in Colorado history and their relationships to key events in the United States.

Geography – Grade 4* Standard: 2.1 Geography - Use several types of geographic tools to answer questions about the geography of Colorado.
* Standard: 2.2 Geography - Connections within and across human and physical systems are developed.

Economics – Grade 4* Standard: 3.1 Economics – People respond to positive and negative incentives.

Math – Grade 4* Standard: 3.1 Visual displays are used to represent data

 Reading, Writing, and Communication – Grade 4* Standard: 2.2 Comprehension and fluency matter when reading informational and persuasive texts in a fluent way.

 Geography – Grade 5* Standard: 2.1 Use various geographic tools and sources to answer questions about the geography of the United States
* Standard 2.2 Causes and consequences of movement
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| Understandings | Essential Questions |
| * Individuals recognize important events and can put them in chronological in order to understand cause and effect such as migration west and clashes with Native Americans; discovery of gold and the Gold Rush; the growth of cities and towns.
* The context and information from the past is used to make connections and inform current decisions. For example, Colorado has had a history of boom and bust cycles that should influence the decisions of city and state planners.
* Technological developments continue to evolve and affect the present.
* Individuals and businesses learn how to use geographic tools to answer questions about their state and region to make informed choices. For example, a family reads a weather map and researches road conditions to inform their decision to go to the mountains in the winter.
* Individuals and businesses use geographic tools to collect and analyze data regarding the area where they live.
* Individuals and businesses consider geographic factors in making settlement decisions.
* Individuals and businesses adapt to and modify the environment. For example, businesses and resorts have been created near hot springs throughout the state.
* Positive incentives influence behavior predictably over time. For example, responsible individuals save for the future and move for better job opportunities.
* Negative incentives influence behavior predictably over time. For example, people move or refuse to relocate due to poor climate or resource shortages.
* The collection and analysis of data provides understanding of how things work.
* Online comprehension strategies differ from those used to comprehend printed text due to non-linear design and the addition of multimedia clues which can greatly distract or aid in understanding.
* Individuals understand the consequences and causes of movement to make connections to current personal or international events such as hurricane victims moving from storms, refugees fleeing from war, and economic hardship causing relocation for better jobs.
* Technology has influenced movement to, colonization of, and the settlement of North America. For example, the West was promoted as the place for economic prosperity. Transportation systems have influenced movement.
* Migration of individuals has multiple effects on society including economic and environmental impacts.
 | * How have past events influenced present day Colorado and the Rocky Mountain region?
* What social and economic decisions caused people to locate in various regions of Colorado?
* In what ways have geographic, economic, cultural, and technological changes influenced Colorado today?
* Why did people of various cultures migrate to and settle in Colorado?
* How have various individuals, groups, and ideas affected the development of Colorado?
* Which geographic tools are best to locate information about a place?
* Why did settlements and large cities develop where they did in Colorado?
* How are the regions of Colorado defined by geography?
* How does the physical location of Colorado affect its relationship with other regions of the United States and the world?
* What physical characteristics led various cultural groups to select the places they did for settlement in Colorado?
* How did Colorado settlers alter their environment to facilitate communication and transportation?
* How does the physical environment affect human activity?
* How does human activity affect the environment?
* Why are different goods and services important at different times in Colorado’s history?
* How have science and technology changed the economy of Colorado?
* How have natural, human, and capital resources had both positive and negative impacts on the development of Colorado?
* What can you learn by collecting data?
* What can the shape of data in a display tell you?
* What does informational text tell readers about themselves, others, and the world?
* How do text features help readers gain information that they need?
* How can various types of maps and other geographic tools communicate geographic information incorrectly?
* How do you think differently about data when it is displayed spatially?
* How and why do we label places?
* What human and physical characteristics have motivated, prevented, or impeded migration and immigration over time?
* How can migration and immigration be represented geographically?
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| KnowledgeStudents will know…… | SkillsStudents will be able to…… |
| According to walkridecolorado.comA **Mineral Belt Trail** is an 11.7 mile long paved pathway that loops around the historic mining district of Leadville, Colorado. According to www.merriam-webster.com/dictionary/campA **Mining Camps** is a place usually away from urban areas where tents or simple buildings (such as cabins) are erected for shelter or for temporary residence (as for laborers, prisoners, or vacationers) migrant labor camp b: a group of tents, cabins, or huts fishing camps along the river c: a settlement newly sprung up in a lumbering or mining region d: a place usually in the country for recreation or instruction often during the summer goes to camp every July.The major life zones* Prairie or grassland
* Semi-desert shrublands
* Foothills or woodlands
* Montane
* Subalpine
* Alpine
* Riparian

Major landforms* Great Plains
* Rocky Mountains
* Colorado Plateau

Major Rivers * Colorado
* Rio Grande
* South Platte
* Arkansas River
* Purgatoire River

Major Mountain Ranges* Colorado Rocky Mountains
* Front Range
* Sangre de Cristo Mountains
* Sawatch Range
* San Juan Mountains

Major Established Railroads* Denver and Rio Grande Western (D&RGW)
* Colorado and Southern (C&S)
* Colorado Midland (CM)
* Union Pacific
* Denver Pacific

Major Forts* Bent’s Fort (largest trading post in the southwest)
* Buzzard’s Roost
* Fort Flagler

Major Trails* Santa Fe
* Cherokee Trail
* Oregon Trail (Santa Fe Extension)
 | * Answer questions about Colorado regions using maps and other geographic tools (DOK 1-2)
* Use geographic grids to locate places on maps and images to answer questions (DOK 1-2)
* Create and investigate geographic questions about Colorado in relation to other places (DOK 1-3)
* Illustrate, using geographic tools, how places in Colorado have changed and developed over time due to human activity (DOK 1-4)
* Describe similarities and differences between the physical geography of Colorado and its neighboring states (DOK 1-2)
* Describe how the physical environment provides opportunities for and places constraints on human activities (DOK 1-2)
* Explain how physical environments influenced and limited immigration into the state (DOK 1-2)
* Analyze how people use geographic factors in creating settlements and have adapted to and modified the local physical environment (DOK 1-3)
* Describe how places in Colorado are connected by movement of goods and services and technology (DOK 1-2)
* Identify variables associated with discovery, exploration, and migration (DOK 1-2)
* Explain migration, trade, and cultural patterns that result from interactions (DOK 1-2)
* Describe and analyze how specific physical and political features influenced historical events, movements, and adaptation to the environment (DOK 1-3)
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| Assessment Evidence (Stage 2) |
| Performance Tasks: T | Other Evidence: OE |
| MapCo Transportation Activity 1MapCo Transportation Activity 2Then and NowColorado Town Study |  |
| Activities |
| Lesson 1:  | MapCo Transportation Activity T1 |
| Lesson 2:  | MapCo Transportation Activity T2 |
| Lesson 3: Then and Now | Students will identify and explain how transportation has changed over time. See attached worksheet. |
| Lesson 4: Colorado Town Study | Students will research a historic town using Mapco and how the geographical features affect access or transportation in and out of the town.  |
| Lesson 5:  |  |
| Lesson 6:  |  |
| Lesson 7:  |  |

From: Wiggins, Grant and J. McTighe. (1998). *Understanding by Design,* Association for Supervision and Curriculum Development

**Activity T1. Transportation T1 Key**

**Activity 1: Early Transportation in Colorado**

**Background Information can be found at:**

<http://www.unco.edu/hewit/doing-history/20th-century-colorado/transportation/>

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| **Step 1** | **Your Task** |
| Open [***Activity One: Early Transportation in Colorado***](http://unco.maps.arcgis.com/apps/webappviewer/index.html?id=24023c9fd41e4ab997e7b344b620ca77) (click on link).You should see a map similar the one below. You may want to zoom out some. Predict on the map below where you think the route of the earliest trails came from the East to Colorado, and then how they might have continued to the West Coast. As you make your prediction, think about the topography (landforms) and the population living in Colorado in the early 1800’s.western_t | Why do you predict these locations? *(Be sure to support your prediction with evidence from the map)* Try to get students to predict trails to hit Denver from KC, and then to connect to some of the major western cities. Trails might follow rivers and avoid the higher Colorado Mountains (or for that matter mountains in other states—not shown on map). Discuss barriers to travel: crossing rivers, canyons, mountains, etc.  |
| **Step 2** | **Your Task** |
| *Use the* ***Layer List*** *button to Check On (make visible) the* **Early Trails** (Expand Transportation1 to see individual layers)*.* By clicking on the trails,  | Locate two trails that run through Colorado. What are their names?Best answers: Santa Fe Trail and Cherokee Trail. Might also mention Santa Fe Extension or Oregon Trail (because it come close to state).Why do you think those trails are there?  They might have been old Native American trails. But, most importantly the trails were likely some of the easiest routes. Many were along rivers for ease of trail (like the Santa Fe).Who do you think used them and how?Students pursue a more precise answer in question #5. But try and get students to speculate: trappers, miners, maybe farmers.What do you notice about their locations?The trails avoid high mountains and often follow river valleys. |
| **Step 3** | **Your Task** |
| *Check OFF* the **Western Territories 1860** and **Western Rivers** layers (towards the bottom of the list), Go to your Bookmarks  and select the Colorado bookmark. This should zoom you to roughly the area of Colorado. If you need to you can zoom back out slightly (manually). *Check ON* the **Colorado Rivers** layer. Locate the Arkansas and Purgatoire Rivers. Notice where the two rivers meet in southeastern Colorado.Now, *Check ON* the **Forts** layer. Go to your Bookmarks  and select the Arkansas--Purgatory bookmark. This should zoom you in to the confluence of these two rives. One of these forts became quite famous! By 1820, St. Louis, Missouri had become a trading center in the United States. Merchants were interested in expanding this trade to Santa Fe and Mexico. They thought it could be a good market for their goods and perhaps a source of gold and silver. In 1821 William Becknell arrived in Santa Fe. He found a trail that had been used by the Indians and Spanish for years. This trail became known as the Santa Fe Trail. Bent’s Fort was built near the mountain branch of the Santa Fe Trail. It was the largest trading post in the southwest. | What are the names of the three forts located where the Arkansas River and Purgatoire Rivers meet (you may need to *Zoom In* more to that one area)? Bent’s FortBuzzard’s RoostFort Flagler |
| **Step 4** | **Your Task** |
| Go to the Doing History website: <http://hewit.unco.edu/dohist/trappers/traders/santafe/intro.htm>Look through the pictures and read the information about each image. Most, but not all of the images will have *About This Image* information. Below, answer each question about traveling on the Santa Fe Trail.Return to the interactive map. If necessary zoom back out to the entire state of Colorado (hint: use the *Colorado* Bookmark). *Check ON* the **1873 Railroads** layer*.* Click on the various railroad linesThe Union Pacific was laying railroad tracks on their way to California. In 1867 the Union Pacific laid those railroad tracks across the Wyoming prairie, avoiding Colorado.Interesting Websites: <http://www.sfmuseum.org/hist1/rail.html><http://www.cprr.org/>This was serious. A town without a railroad line had very little chance of growing. | Who used the trail?American traders (many from St. Louis, Mexicans (former Spanish). But also, Native Americans and settlersHow did people travel? Wagon.What supplies did they need for the journey?Out of this section of the website students could find numerous things. Horses or oxen to pull the wagons. Food for the animals, weapons for hunting/protection, goods to trade for supplies along the way. Food stuffs, traps, knives, guns, lead, powder, clothing. Many things.What do you notice about the location of the first railroads as compared to the early trails in Colorado?They both just come into Colorado and focus on the Front Range. Neither one goes very far directly into the mountains.Where were the first railroad lines built?Along Front Range, in from the Plains. To Denver, but also those few lines that went into the mountains connected some of the early mining towns—like Central City. The Lines often (although not as obvious with the 1873 layer) followed old trails and river valleys.Name the first two railroad lines built into Colorado from another state. 1.Denver Pacific  2.Kansas PacificWhy do you think they decided against building new railroad tracks directly across Colorado?Too mountainous, and thus expensive. The technology of blasting long tunnels through solid rock was just developing at the time. Plus, the Union Pacific was getting paid by the government on a per-mile basis. The more miles that could be laid in a day the more profit! Ultimately, it was the Central Pacific (started building east from California) that developed new and improved technologies for building track through the Sierras of California. Why do you think a railroad would be so important for growth?Railroads were key to importing finished goods (cloths, tools, food, etc.) and exporting products and raw materials (cattle, wheat, corn, minerals). A town with no railroad had very little chance of survival in the 19th century.  |
| **Step 5** | **Your Task** |
| The railroad was the cheapest, fastest, most comfortable, and the only dependable, year-round means of transportation at the time. The Denver Pacific decided to build “feeder tracks” from the Union Pacific tracks in Wyoming south into Colorado. In 1870 another railroad line was completed in Kansas to go west to Colorado.The Denver Pacific Railroad line continues west of Denver.Denver was a “supply town” because the smaller mining towns needed supplies from Denver. These mining communities were difficult to access until the 1860’s when the railroad lines were built. | Locate where these first two Railroad lines meet. What community do you think this is?The Denver areaWhat do you think was going on in the towns west of Denver in the late 1800’s? Why would this area need a railroad *(hint: check on and off the* ***Mineralbelt*** *layer!)*?Mining (especially gold and silver)How do you think supplies were brought to towns in the mountains before the railroad was available?Let students take a stab at this question. They will find the answers in #13. You could have students go directly to question #13. |
| **Step 6** | **Your Task** |
| Now go to the Doing History website at: <http://hewit.unco.edu/dohist/mining/transprt/submenu.htm> to check your answer. Before the railroad, large wagons transported goods to Denver. It took four to six weeks to reach Colorado by wagon. Once in Denver, supplies were put into smaller wagons that were then hauled up to the mountain communities. Mules and burros also carried supplies to the most isolated areas. This kind of transportation was expensive so the cost was added on to the price of goods. The fastest way to reach Colorado before the railroad was by stagecoach. It took ten to twelve days to cross the plains by stagecoach. So it was much faster than traveling by wagon but the price was high. It cost $100 - $125 to travel one-way in 1859. | How were supplies brought to the mining region of Colorado?Early on by foot or via pack trains with horses/mules/donkeys; horse drawn vehicles/wagons; even skiing; Later on: railroads, and in a few cases tramways! |
| **Step 7** | **Your Task** |
| *Check OFF* all layers and then *Check ON* the **1879 Railroads**, **Colorado Rivers**, **Colorado Mountains**, and **Colorado** layers. *Check ON* the **1895 Railroads** layer. Before 1895, the railroads were concentrated along the front range of Colorado. Now the western portion of our state is included. | What do you notice about how the railroads have changed?More railroads. Another railroad came into Colorado from Kansas. This railroad (Atchison, Topeka, and Santa Fe) then connected with the Rio Grande and Denver Pacific railroads. What changes do you notice?  A number of new railroad lines come into Colorado from Kansas. Railroads have spread out into the mountains and portions of Western Colorado.Who do you think was living and working in the western half of our state at the turn of the century? Best guess should be farmers, ranchers, and miners; and that would be correct. Removal of the Ute Indians in the late 1870s and 1880s from many of these areas also opened up the Colorado Mountains and Western Slope for settlement. |

**Activity T2. Transportation T2 Key**

**Activity 2: Post 1900 Transportation in Colorado**

**Background Information can be found at:**

<http://www.unco.edu/hewit/doing-history/20th-century-colorado/transportation/>

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| **Step 1** | **Your Task** |
|  Open [***Activity Two: Post 1900 Transportation in Colorado***](http://unco.maps.arcgis.com/apps/webappviewer/index.html?id=ea49214144034d4ab0fc7c26d02d6d7e) (Click on link).You should see the: **Denver, Colorado** **Mountains**, and **Colorado Rivers** layers. *Use the* ***Layer List*** *button to Check ON (make visible) the* **1924 Paved Roads** and **1920 City Pop.** layers (Expand Transportation2 to see individual layers)*.* | Where were the first paved roads in Colorado?Mostly near/in major cities. Quite a few going out from Denver. Some along major rivers.What else do you notice about these early roads? There aren’t very many, and they don’t go for long distances.Why do you think there weren’t many paved roads in 1924? Very few people owned cars. Automobiles were just starting to become widely used. Paved roads would have been difficult and expensive to build. |
| **Step 2** | **Your Task** |
| Before the automobile was available, people traveled within cities by streetcar. Horses pulled the first streetcars. Later, electric trolleys replaced streetcars. Streetcars enabled Denver to grow outward into “streetcar suburbs”. These suburbs were neighborhoods on or near the streetcar lines. More information: <http://www.unco.edu/hewit/doing-history/colorado-cities/transportation/streetcars.aspx>Go to your Bookmarks  and select the Denver Area Bookmark. This should zoom you in to Denver and the surrounding area. Click on some of the cities/towns (yellow circles) that are connected to Denver by these early roads (*you have to click right in the middle of the yellow symbols*). |  List at least four:BoulderGoldenMorrisonWestminsterAuroraetc.  |
| **Step 3** | **Your Task** |
| *Check ON* the**1946 Paved Roads***.* Go to the Colorado Bookmark. To see the change feel free to *Check ON* and *Check OFF* the 1946 roads layer several times.  | Why would there be so many more roads built between 1924 and 1946?  A lot more roads. The roads now cover all major portions of the state. Nearly all cities are connected by roads. There are more roads because by 1946 many people now owned cars and the automobile had become a major form of transportation. |
| **Step 4** | **Your Task** |
| *Check OFF* the **1924 Paved Roads**. *Check ON* the **1913 Railroad**s layer. Now zoom in and out to different areas of the state. Each time you do this Check ON and OFF the **1946 Paved Roads** layer. See if you can figure out a relationship between the roads and the railroads! It’s not perfect—but there is one | What do you notice about these two transportation routes?The major paved roads in 1946 and the 1913 railroads tend to be located in the same place.Why do you think the routes are so similar?Have students turn on/off the Colorado Rivers layer. Many of the railroads were initially built in river valleys. These areas were relatively flat and construction costs were generally lower. People also tended to live in these “flatter” areas. Logically, when roads were built they tended to also be built in the same valleys. Ask your students if they have ever been on a highway with their parents while alongside a train could be seen going approximately the same direction! |
| **Step 5** | **Your Task** |
| *Check OFF* the **1913 Railroads**, **1920 City Pop,** and **1946 Paved Roads** layers. *Check ON* and the **2000 City Pop**. and the **Current Major Roads** layers. If needed, zoom back out to all of Colorado.The availability of the automobile meant that people could live even further away from Denver. With the car, they could access the city from beyond the “streetcar suburbs”. Therefore, the population grew along these newly built highways creating a much larger urban network. *Remember: the* ***Current Major Roads*** *layer shows ONLY some of the major roads—not every single road!*By the year 2000, the cities surrounding Denver have merged together, creating a large “urban corridor” along interstate 25. This urban corridor is what we call the Front Range. Students may need to zoom in some. Remember that students need to click directly in the center of the brown symbol to get the pop-up table for that city. Zooming in can help. | Go to the Front Range Bookmark. What changes do you notice along Colorado’s front range?A lot more cities and all the cities are bigger. If you wish have students look at the legends for the layers by clicking on the  button.Denver is still the largest city but what do you notice happening to the cities surrounding it? All the cities have grown dramatically. Students might also mention that Denver isn’t as dominant a city as it was in 1920 (which is certainly true). What large city is at the northern end of the Front Range?Ft. Collins, maybe GreeleyWhat large city is at the southern end of the Front Range?Pueblo in the south (although some students may believe Colorado Springs is the southern extent of the Front Range—which isn’t really correct). |
| **Step 6** | **Your Task** |
| On the timeline, label the different types of transportation that became popular in Colorado. (Railroad, Wagon, Automobile, Streetcar, Stagecoach)  | Wagon/Stage Railroad StreetCar Auto \_\_l\_\_\_\_\_l\_\_\_\_\_\_l\_\_\_\_\_l\_\_\_\_\_\_\_l\_\_\_\_1830 1860 1890 1920 1940Which type of transportation would you prefer? VariesWhy? Varies. Goal is to get students to discuss the different sorts of transportation and what was involved in each.Where would you travel using this method? How far would be comfortable? Varies. Goal is to get students to discuss the different sorts of transportation and what was involved in each.Briefly describe travel using the transportation method that you chose.Varies. Goal is to get students to discuss the different sorts of transportation and what was involved in each. |