Locating Provinces, Territories and Capital Cities on a Map of Canada

Social Studies Learning Outcome:
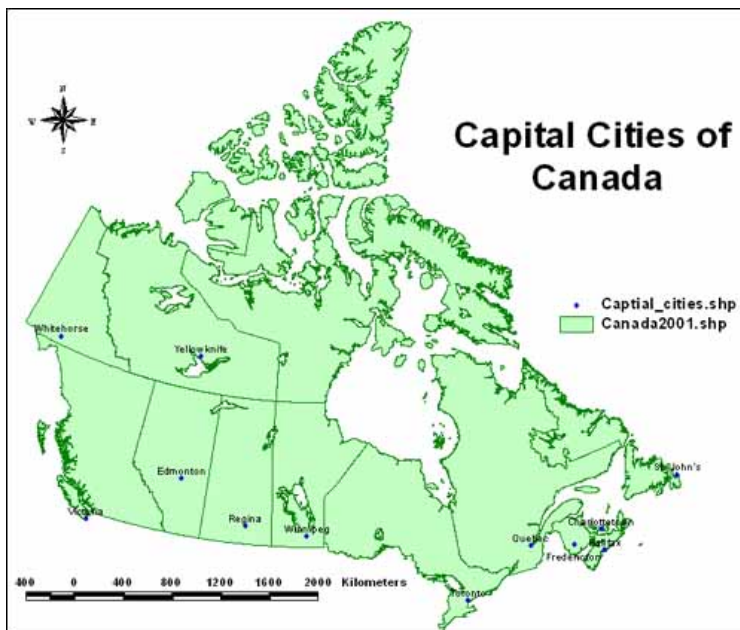**Students will:**

S2-KL-014   Locate provinces, territories, and capital cities on a map of
                     Canada.

Grade Level: Grade 10

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Introduction

In this exercise you will learn how to create a map of Canada using ArcView GIS
software, and to locate and label the provinces, territories, and capital cities. If
you have used ArcView before, you will be familiar with the tools and buttons
required for this activity. If you are new to ArcView, be sure to read and follow all
the instructions very carefully. You may need to refer to an Atlas of Canada to
help you locate the capital cities later in this lesson.

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Required Files
From the ArcCanada 3.0 Disk 1

National/shp/canada2001.shp   *Canadian Provinces and Territories*

Instructions

1. Start ArcView and in the small inside window, put a dot in the radio button that says: *Create a new project with a new View*. Push **OK**.

Figure 1 – Opening window of ArcView

You will now be asked if you want to add data to the new view, answer **YES**.

2. Now, add some maps to the view. Go to the **Add Theme** dialog box, which was opened automatically, and on the bottom right hand corner open the drive drop down list and select the drive where the data is located (Figure 2). If you don't know which drive it is in, ask your instructor.
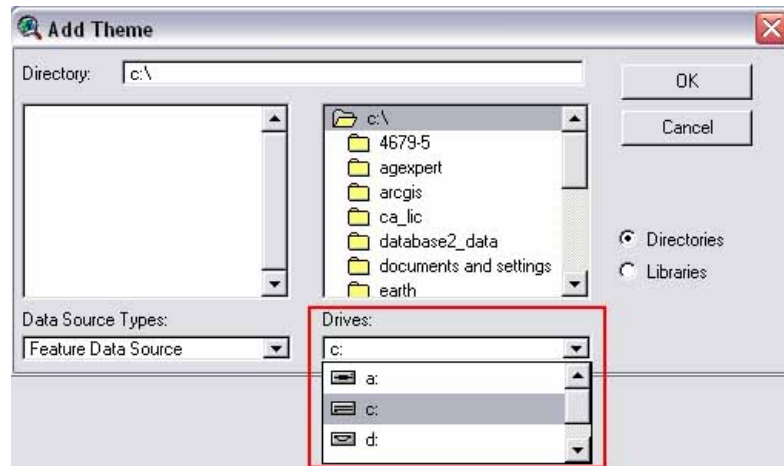
Figure 2 – Selecting drives from the Add Theme dialog box

3. Now you need to find the data (theme layers) you wish to add to the view. Check with your teacher about where the data is stored. A typical installation would be as follows:
   - ☐ Go to the Shared Drive on your school network and select the ArcCanada Folders.
   - ☐ For the outline map of Canada, select ArcCanada disk 1, then **national**, and finally **shp** (shape files).
   - ☐ A list of themes will now appear in the left column.

4. Select **canada2001.shp** file (highlight and click **OK**, or simply double click). You will now see the theme listed in the legend, but the view is still blank.

5. You need to turn it on by clicking on the small raised box in the upper left corner of the theme. (Figure 3) Once this is done you should have a "green" map of Canada!
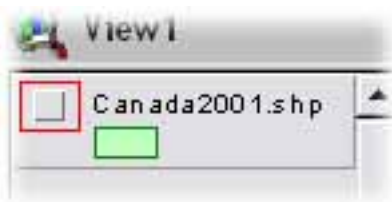

Figure 3 – Turning themes on / off

6. Before you proceed, you want to change the map projection to make the map look more accurate. Select **View** on the menu bar, then click on **Properties** in the drop-down menu. In the **Theme Properties** dialog box

change the map units to *decimal degrees* and the distance units to *kilometers*.

7. In the same menu select **Projection** and set the following:
   ☐ Under **Category** select **Projections of the U.S.**
   ☐ Under **Type** select **Lambert Conformal Conic (North America)** then click **OK**.
   ArcView will redraw your map in the new projection.

8. Now enlarge your map as much as possible to fill the screen using the zoom tool. The **Zoom In** tool is best for this. (🔍)

9. You may brighten up your map by distinguishing each province and territory with a different color. Use the **Legend Editor** tool for this. Go to **Theme** on the menu bar and select **Edit Legend…,** or simply double click anywhere in the raised box in the table of contents. You will now see a dialog box with several options. (Figure 4)
   ☐ Under **Legend Type** select **Unique Value**
   ☐ Under **Values Field** select *names* and the legend will identify each province with a different color
   ☐ You can change the colors by clicking on the options under **Color Scheme**.
   ☐ Make your choice and click **Apply** button. ArcView will redraw your map and show the changes in the table of contents.
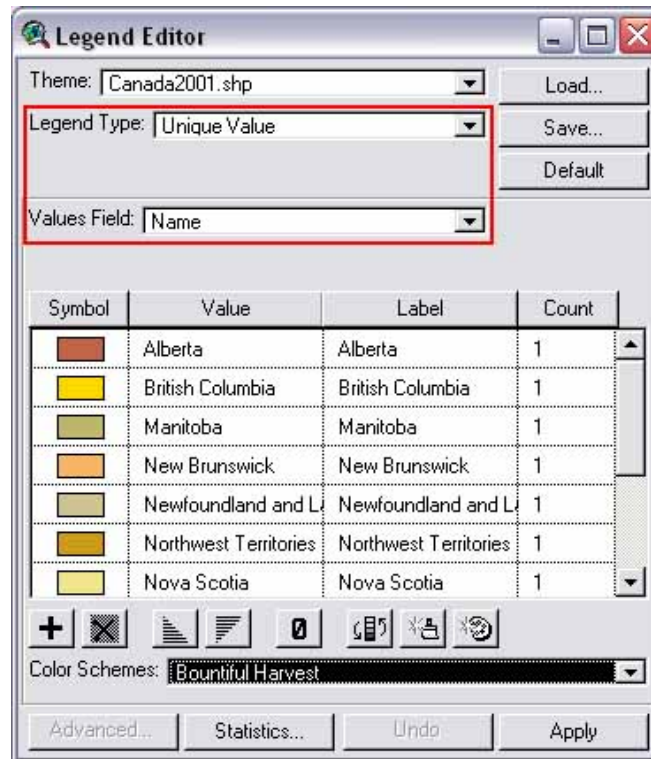
Figure 4 – Setting the Legend Type to Unique Value and the Values Field to Name.

10. This is a good time to save your project. If you are doing this exercise on a computer that is on a local network, go to **File** (in the menu bar) and select **Save As**. In the dialog box you **must first select the drive** you will use for saving your project, then you can give your project a name (e.g., GIS Map of Canada) and click the **Save** button. As you progress through the lesson its best to save your work frequently so you won't lose the entire project if something goes wrong.

11. Now its time to add the capital cities for each province and territory. The ArcView data set for Canadian cities includes a large number of cities, however for this lab exercise, we just need the national, provincial and territorial capital cities.

12. We will have to create our own theme called capital_cities, by locating and labeling the required cities. Go the **View** menu item, and select **New Theme…**

13. In the **New Theme** dialog box, select **Point** as your *Feature Type* and click the **OK** button.

14. The next dialog box asks you to name the theme, **you must first select the drive** and the directory where you saved your project, then type in the theme name of **capital_ cities.shp** under file name in the top left of the dialog box and click the **OK** button. (Figure 5)
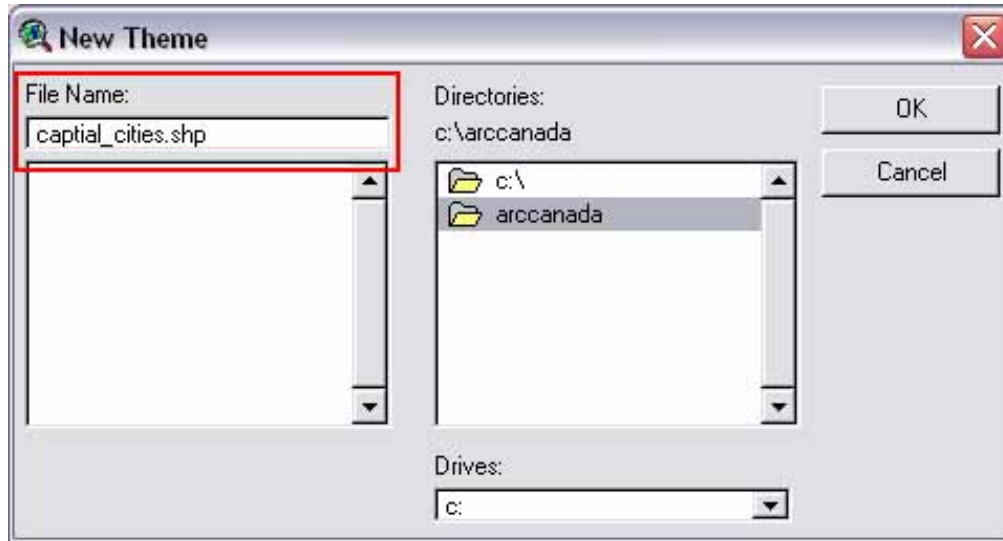

Figure 5 – Saving the new point theme capital_cities.shp

15. You will now see the new theme in the table of contents on the left hand side of your view.   You should also notice a **dashed line** around the theme turn-on box indicating that this theme is in editing mode and can be modified. (Figure 6) ArcView shows a random color dot for a city, you can change the color following the details in **Step 9**.
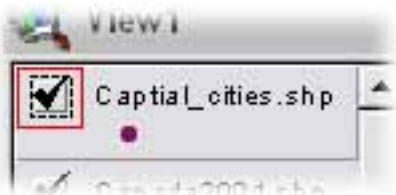

Figure 6 – Captial_cities.shp in editing mode.

16. Now go to the **Draw Point** button (⊡) , then click on the map at every location of a capital city, making a dot at each.

17. Once all the cities have been located, you have to stop the editing the capital_cities theme you have just created. To do this select the **Theme** menu item and from the drop down menu, select **Stop Editing**. A dialog will ask you to confirm that you want to save the editing, select **Yes**. The dashed line around the theme visibility box should now disappear.

18. The next step is to label each capital city. First, make sure that the **capital_cities.shp** is the active theme, (raised on the legend). Now, select the **Text** button on the toolbar (T̲).

19. With the text tool selected, move the cursor to a city you would like to label and click, and you will get a **Text Properties** box where you can type in the name of the city and click **OK**. (Figure 7) If you misspelled the name, or do not like the location of the label, you can **delete** it by selecting the **black pointer arrow** button (▮) in the toolbar, then move your cursor over the label you want to delete and click. Once the *handles* appear around the label you can either delete it by pressing the delete key on the keyboard, or you can drag the item to another location with your mouse, or enlarge or reduce the size of the label by moving your cursor over a corner *handle* and change the size. To return to labeling, select the **Text** button again before you proceed. Use a Canadian atlas to determine the names of the provincial and territory capital cities.
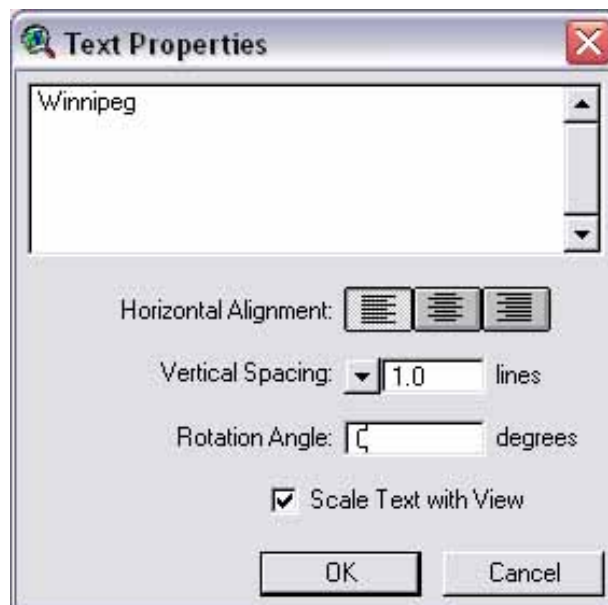

Figure 7 – The text properties dialog box.

20. **Good Job!** You have now created your Political map of Canada now that your map is complete, show it to your teacher and ask for further instructions.

21. Now we need to create a layout where you can add basic map elements and get your project ready to print.   The layout allows you to customize

your map, giving it a title, legend, scale, and to show the name of the author who produced it!

22. To start your layout, go to the **View** menu then select **Layout…,** and **Landscape** from the **Template Manager** dialog box and click **OK**.

23. Like magic, your map will now appear in your layout document. ArcView has automatically given your map a default title, legend, north arrow and scale bar. You will need to change these to create a proper layout. Begin by using the **black pointer arrow** button (⬛) double click on the title and replace *View 1* with a more appropriate title and click **OK**. The new title has *handles* around it, which means you can select the black pointer arrow and move or enlarge the title by dragging the handles.

24. You can make similar adjustments to the north arrow, legend, or scale bar, by selecting them with the **black pointer arrow** or by doubling clicking the feature you would like to adjust. You may wish to select a new scale bar that shows kilometers rather than miles. Be sure to select *view 1* in the **ViewFrame** box, otherwise you will have an empty scale bar.

25. Finally, add your name to the project. Select the **Text** button on the toolbar (Ⓣ), then click in the bottom right corner of your layout, and type your name in the **Text Properties** dialog box. Before you save your final project, make sure it meets all the cartographic requirements of good geography.

Optional Activities

1. Make sure the **provinces** theme is active (raised in the legend). Select the **identify** (ⓘ) button in the left of the menu bar. Now move your cursor over any province or territory and click. You will get an **Identify Results** box that gives you data about the province you selected. This demonstrates a key feature of ArcView that links information with geographic locations. You can see all the data in a table format when you click the table button (▦). If you select a province on this table, it will highlight in yellow and automatically highlight that province on the map. It is possible for you to create your own data table for the cities theme you have added to the map.

2. You can also measure distances from place to place. Select the measuring tool (📐), then click once on a location and move the cursor to another location. You will see the distance measurement on the bottom

left of your screen. To measure segments, click once to change
directions, to end your measurement, double click.