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National Center for Geographic Information and Analysis

Secondary Education Project:

Color Your World

An Exploration With ArcView 2.0

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Color Your World is the latest addition to the set of resources developed by the Secondary Education Project of the National Center for Geographic Information and Analysis (NCGIA.) The Secondary Education Project has been supporting efforts to bring the great educational potential of geographic information systems (GIS) to the K-12 schools. This module/game introduces students to geographic data and the geographic information system, ArcView 2.0 which is a commercially available GIS produced by ESRI. This particular game was conceived, designed, and written by Paul Sutton, Paul Van Zuyle, and Steve Palladino.

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Questions or comments related to the operation and content of Color Your World should be directed to Paul Van Zuyle or Paul Sutton at the address above, at 805-893-8652, or at vanzuyle@geog.ucsb.edu or sutton@geog.ucsb.edu.

Acknowledgements:

"Color Your World" was primarily developed with support from ESRL The NCGIA would like to thank Jack Dangermond, and the people at ESRI for the ArcView 2.0 software and the technical and financial support that made "Color Your World" possible. If you are interested in acquiring the complete ArcView 2.0 GIS software package contact:

Environmental Systems Research Institute, Inc.
380 New York Street
Redlands, California 92373 USA
Telephone: (909) 793-2853
Fax: (909) 793-5983

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Color Your World

Color Your World is an interactive Geographic Information System (GIS) based computer game that exposes students to fundamental and essential geographic information that is necessary for understanding not only geography but politics, economics, demography, and other interesting information about our world. The game is designed so that students can play it over and over again and continue to learn from the experience of simply playing the game. Just as writing cannot be accomplished without the mastery of letters, spelling, words, and grammar; geographical communication requires that one have a basic working knowledge of the names, locations, and attributes of the countries of the world. In addition, the game exposes students to thematic maps which display patterns and distributions of important phenomena.

The game is designed to be an interactive, non-repetitive experience to insure that Color Your World is not merely a digitized coffee table book. Incorporating a scoring function provides a means of evaluating the knowledge of the student and challenging the egos of all players. The information found in Color Your World provides a vital contextual background necessary for further exploration in more sophisticated areas of geography and other disciplines.

Hardware and Software Requirements

In order to install Color Your World on your own computer you must have at least 16 Megabytes of Ram on your IBM-compatible PC (486 or better) or be running it on a workstation. In addition you will need the ArcView 2.0 software complete with the sample world dataset that accompanies all official copies of the ArcView 2.0.

Installation

Color Your World is available on diskette or via Internet connection to the NCGIA.

Installation consists of copying a set of files from the diskette or the ftp site to a directory on your PC called c:\av2\cyw\. In addition, the sample data files for the world that were packaged with ArcView 2 are required to run the game. The sample data files are assumed to be in c:\win32app\avdata\world\. If this is not the case, ArcView will prompt you for the location of the sample data files. Saving the project file with changes at the end of the game will preserve the new location for the next time you play.

The files included with Color Your World are the project file, cyw.apr; a Windows helpfile, cywhelp.txt or cywhelp.doc (MS Word), a database file, zanydata.dbf; and a set of .avl files which contain legends.

Color Your World is designed to display a picture for each country depicting one aspect of the culture or physical environment. This version of Color Your World, however, is not bundled with the large picture files.

Opening the project file called cyw.apr will start the game. The original Avenue scripts are available for examination and can be changed in the project.

Color Your World can also be run on workstation versions of ArcView 2. The project file, however, must be modified in order to point to the directory where the sample data and the distribution files are located.

The NCGIA ftp site is: <ftp.ncgia.ucsb.edu>. The files are located in /pub/arcview2. The NCGIA WWW address is: <http://www.ncgia.ucsb.edu>.

How to Play

The objective of Color Your World is to use the power of GIS to learn about our world. The game has the player use ArcView 2 to identify the names of specific countries, the themes of displayed maps, and the locations of countries with specified attributes. This is done with the help of maps, tables, pictures and charts. All of these forms of information are supported by ArcView 2.

The game proceeds in a series of rounds. Each round consists of identifying a series of individual countries with the help of a map clue, a picture clue, or a table clue. The round concludes with the presentation of a global thematic map for which the player is prompted to identify the theme of the map (e.g. number of camels, total population, etc.). After each round, a map is displayed that highlights the countries the player was to identify. Correctly identified countries are highlighted in a solid yellow and incorrectly identified countries are displayed in a cross-hatched yellow.

After completing all of the rounds the game proceeds to a Bonus Round. In the Bonus Round the player is challenged to identify the five top countries for a particular theme (e.g., the five most populous countries.) In this Bonus Round, the player selects countries interactively on the world map. A chart displays the theme value in relationship to the other countries selected.

At the end of each part of each round, the player can choose an answer from a list of options. These round evaluations are titled: Country Identification, Mystery Theme, and Bonus Round. A running score is tabulated based upon the responses of the player. A final score and rank is presented at the end of the game.

Levels of Play

There are three levels of play, Beginner, Intermediate, and Expert. In the Beginner mode, the game is automated. The clues are automatically presented to the player. After a set amount of time for the player to observe the clues, the multiple choice evaluation box will appear. Since this mode uses all of the clues, the score is reduced by the cost of all the clues.

The Intermediate and Expert levels allow the player to drive the game and limit the clues used. In the Expert mode, the map clue is at a larger scale which means that it contains only the country boundary and the immediate neighborhood. Since the map clue is more difficult in this mode, there is a lower price for this clue than in the Beginner and Intermediate levels.

Rounds

In this game there are three rounds with three country identifications per round. Each round begins with Country Identification and concludes with a Mystery Theme question. The Bonus Round does not begin until all the rounds have been completed.



Country Identification

Identifying the names of countries is the primary challenge presented to the player of this game. The player must buy clues that provide information about the country to be identified. All of the clues have a point penalty associated with their use. The three types of clues available to the player are: Map Clues, Table Clues, and Picture Clues. After using one or more of these clues, the player can get a multiple choice question from which they select the country they believe to be represented by the clues they have seen.



Map Clues

When a player chooses 'show map clue' or presses the map clue button, a political outline map of the country in question will show up. Depending on level of play, the map will show varying levels of regional context to help in the identification of the country. This is probably the most valuable clue and consequently costs the most.



Table Clues

When a player chooses 'show table clue' or presses the table clue button, a table appears at the bottom of the screen that provides various types of data concerning the country in question. Items such as Gross Domestic Product per capita, population density, population growth rate, and number of MacDonalds are provided to help the player identify the country in question.



Picture Clues

When a player selects 'show picture clue' or presses the picture clue button, a photograph taken in the country they are trying to identify will show up on the screen for several seconds. The photographs are pictures of people, landscapes, wildlife, economic activities, archaeological sites, etc. It is rather difficult to identify the country from only the photograph; however, it does provide an extra piece of information that can make the difference.

Note: although picture clues are supported by Color Your World, picture files are not included with this distribution due to file size and copyright issues.



Mystery Theme

At the end of each round the player is presented with the Mystery Theme. The Mystery Theme is the presentation of a world thematic map such as total population, population growth rate, balance of trade, energy use, per capita calorie consumption, etc. The user is then challenged to

identify the theme of this map from a multiple choice question. There are no extra clues for assistance in this task; however, it is advised that the user inspect the legend of the map prior to answering the Mystery Theme question. Correct identification of the Mystery Theme adds 10 points to the player's score. There is no penalty for incorrectly identifying the Mystery Theme.



Bonus Round

After completing all of the rounds of a game the player is presented with one final opportunity to boost his or her score. This is the Bonus Round. In the Bonus Round the player is presented with the task of identifying the top five countries of the world according one of the themes displayed in Mystery Theme. The player chooses these countries not by naming them but by clicking on them with the mouse on a displayed map. Their selections will highlight in yellow and they can adjust their selection as they go along. However, when the player is satisfied with their selection they choose 'evaluate Bonus Round' from the menu and their final score will be tallied and displayed.



Scoring

Virtually every action in this game involves the addition or subtraction points to the players score. The player starts with a score of zero and progresses from there. The clues used to identify countries come at various "prices". The prices are: Picture Clue: 1 point; Table Clue: 1 point; Map Clue: 4 points (2 points in the expert mode). Correctly identifying the country results in a score of 10 points. An incorrect identification is a 5 point penalty, Pressing 'Cancel' when presented with a multiple choice Country Identification results in a two point penalty. Mystery Themes score 10 for correct identifications and have no penalty for incorrect answers. In the Bonus Round the player receives 5 points for every country correctly identified. The maximum score possible in the beginner mode is 91 points and the maximum possible in the intermediate and expert modes is 136. (That is achieved by using only a single picture or table clue per country.)

The final score results in the earning of a title indicating the player's level of knowledge. The standards for the titles are listed below:

<u>Score</u>	<u>Title</u>
120 and up	Geo God
100 to 119	Geographer
80 to 99	Explorer
60 to 79	Diplomat
40 to 59	Travel Agent
20 to 39	Tourist
0 to 19	Aimless Wanderer
Less than 0	Lost in Space...

QUICK REFERENCE


Country Identification

Clues


Map Clues

Click on  or use the menu option: **Clues - Map Clue** to get a map of the country you are supposed to identify

Table Clues

Click on  or use the menu option: **Clues - Table Clue** to get a table displaying various economic and demographic statistical information about the country you are trying to identify

Picture Clues (Not available in this version)

Click on  or use the menu option: **Clues - Picture Clue** to get a picture from the country that you are trying to identify


Country Identification Evaluation

Click on  or use the menu: **Answer Questions -Country Identification** when are ready to name the country

Mystery Theme Evaluation

Click on  or use the menu: **Answer Questions -Identify Mystery Theme** when you are ready to identify the Mystery Theme

Bonus Round Evaluation

Click on  or use the menu option: **Answer Questions - Evaluate Bonus Round** when you have selected the five countries you believe are top five for the theme

Check Score

Click on  or use the menu option: **Help - Check Score** to see your present score