



PARTNERSHIP FOR
21ST CENTURY SKILLS

ICT Literacy Map

Geography

This map was created in conjunction with the National Council for Geographic Education

GEOGRAPHY

Information and Communication Skills

(The Partnership for 21st Century Skills has emphasized these key learning skills, on pg. 9 in "Learning for the 21st Century")

(These are the 21st Century Tools that can be used to teach geography)

(These are a sample of the things that students will be able to do using the tools in column 2 to attain the skills in column 1.)

| Learning Skills for: Information, Communication, and Media Literacy | 21st Century Tools for: Communication, Information Processing, and Research | SAMPLE Student Outcomes for: Accessing, Processing, Managing, Integrating and Communicating Information |
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| <p><u>Information and Media Literacy</u></p> <ul style="list-style-type: none"> ● Accessing and managing information ● Integrating and creating information ● Evaluating and analyzing information | <p>audio/video tapes, films, TV programs, tape/video recorders, newspapers, books, computers, geographic information systems, global positioning systems, remote sensing (aerial photographs and satellite imagery), database and spreadsheet software, Internet and digital libraries</p> | <p><u>By grade 4 students will be able to:</u></p> <ul style="list-style-type: none"> ● Access information about places around the world from a variety of media sources ● Gather original data such as observations of weather and climate in the students' hometown and create graphs or charts to display the information ● Analyze and compare information in a variety of media such as photographs, maps, and remotely sensed images (aerial photographs and satellite imagery) to draw conclusions (e.g., describe change over time) <p><u>By grade 8 students will be able to:</u></p> <ul style="list-style-type: none"> ● Download and store relevant spatial data from the Internet ● Create original data sets using tools such as a global positioning system and input spatial data into spreadsheets ● Conduct visual analysis of remotely sensed images (aerial photographs and satellite imagery), maps and other graphic representations of environmental data from local to global in scale <p><u>By grade 12 students will be able to:</u></p> <ul style="list-style-type: none"> ● Identify spatial data for study of the local community appropriate in scale and projection ● Create new data sets and effectively use these data in a geographic information system ● Conduct analysis using demographic data in a geographic information system to analyze voting patterns and determine redistricting guidelines |

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| <p><u>Communication Skills</u> Understanding, managing, and creating effective communications:</p> <ul style="list-style-type: none"> • Orally • Written • Using multimedia | <p>Graphics programs, printers, copiers, computer presentation tools, maps (hard copy and digital), word processor, e-mail, desktop publishing programs</p> | <p><u>By grade 4 students will be able to:</u></p> <ul style="list-style-type: none"> • Present geographic information in an oral report accompanied by maps and graphs • Construct maps, diagrams and charts to display geographic information and write a simple summary of observations • Use a multimedia tool to create a simple slide show that describes the student's favorite locations in the community (e.g., movie theatre, bike trails, etc.) <p><u>By grade 8 students will be able to:</u></p> <ul style="list-style-type: none"> • Present an oral report on a recent major geographic event – hurricane, volcanic eruption, resource discovery – using different newspapers, news magazines, and Internet news sources • Compose an e-mail message to a local or state official stating the student's opinion on a relevant community issue (e.g., suggesting the location of a new community recreation area and supporting the suggestion with factual information) • Create a series of web pages that use maps to portray information about the student's hometown (e.g., community atlas) <p><u>By grade 12 students will be able to:</u></p> <ul style="list-style-type: none"> • Prepare an informative oral presentation that evaluates alternative land use proposals using various presentation tools (e.g., multimedia slide show) and incorporating spatial data and maps. • Write an editorial in favor of or opposing a land use proposal citing relevant geographic data for support • Use data and maps prepared in a geographic information system to compare and analyze alternative land use proposals and communicate conclusions using such tools as html, advanced multimedia applications, and video technologies |
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GEOGRAPHY

Thinking and Problem-Solving Skills

(The Partnership for 21st Century Skills has emphasized these key learning skills, on pg. 9 in "Learning for the 21st Century")

(These are the 21st Century Tools that can be used to teach geography)

(These are a sample of the things that students will be able to do using the tools in column 2 to attain the skills in column 1.)

| Learning Skills for: Thinking and Problem Solving | 21 st Century Tools for: Thinking and Problem Solving | SAMPLE Student Outcomes for: Problem Solving |
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| <p><u>Critical Thinking and Systems Thinking</u></p> <ul style="list-style-type: none"> • Exercising sound reasoning • Making complex choices • Understanding the interconnections among systems | <p>graphs, maps, geographic information systems, remote sensing (aerial photographs, satellite images), database and spreadsheet software, newspapers, books, computers, Internet, television, database and spreadsheet software, digital libraries, presentation devices, LCD projection device, "smart" whiteboards</p> | <p><u>By grade 4 students will be able to:</u></p> <ul style="list-style-type: none"> • Use information gathered from newspapers, television and the Internet to describe how weather and climate influence activities in the students' region on a daily, seasonal, and permanent basis. • Map and analyze the spatial aspects of routes to and from school and choose most desirable and safe way to school • Describe the relationship between population growth and air pollution by interpreting a graph displaying information on both topics <p><u>By grade 8 students will be able to:</u></p> <ul style="list-style-type: none"> • Use a geographic information system to compare alternative sites in order to identify the best location for a new park according to defined criteria • Develop innovative plans, including specific recommendations illustrated by maps, to improve the quality of environments in large cities, weighing the benefits and drawbacks of each plan • Use a spreadsheet program to compare data, collected from digital libraries, about cities in the developing world. Specific tasks may include investigating the relationships among political, social, and environmental change <p><u>By grade 12 students will be able to:</u></p> <ul style="list-style-type: none"> • Using the Internet and digital libraries, identify and compare alternative, sustainable economic activities in regions of significant resource depletion • Use a geographic information system to identify physical environments that impose limits on population growth, such as water scarcity in southern California • Use remote sensing (aerial photographs and satellite imagery) to explore and analyze environmental change such as deforestation in a given region |
| <p><u>Problem Identification, Formulation and Solution</u></p> | <p>maps, geographic information system, aerial</p> | <p><u>By grade 4 students will be able to:</u></p> <ul style="list-style-type: none"> • Use thematic maps to ask and answer questions about the |

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| <ul style="list-style-type: none"> Ability to frame, analyze and solve problems | <p>photographs, remotely sensed images (aerial photos, satellite photos), presentation software, Internet, television, database, digital libraries, LCD projection devices, “smart” white boards</p> | <p>distribution of the human population on Earth</p> <p><u>By grade 8 students will be able to:</u></p> <ul style="list-style-type: none"> Create maps using a geographic information system to make decision about the best location for a new bike shop <p><u>By grade 12 students will be able to:</u></p> <ul style="list-style-type: none"> Use remote sensing (aerial photographs and satellite imagery) along with thematic maps to analyze selected consequences and impacts of building homes in environmentally sensitive areas, and present possible scenarios for resolution |
| <p><u>Creativity and Intellectual Curiosity</u></p> <ul style="list-style-type: none"> Develop, implement and communicate new ideas to others Staying open and responsive to new and diverse perspectives | <p>remotely sensed images (aerial photos, satellite photos), videography equipment, Internet, newspapers, maps, geographic information system, word processing software, large format printers, LCD projection devices, “smart” white boards</p> | <p><u>By grade 4 students will be able to:</u></p> <ul style="list-style-type: none"> Use aerial photos to identify the different economic activities in their communities; in groups create a poster showing the different uses and possible areas for growth in the future Use desktop publishing program to create an informational brochure that describes ways to recycle plastic milk cartons in the local community, the likely consequences of the various solutions, and asks people for their opinion on the issue <p><u>By grade 8 students will be able to:</u></p> <ul style="list-style-type: none"> Use the Internet to locate and download regional and global data about teenage purchase of recorded music, and prepare graphs comparing these two data sets for a multimedia presentation to the class Write a dialogue for two people expressing different points of view on the same geographic issue, such as a the foreman of a logging crew and a conservationist debating the use of a national forest <p><u>By grade 12 students will be able to:</u></p> <ul style="list-style-type: none"> Use a geographic information system to analyze information on soil, hydrology, and other factors in order to choose the best site for a sanitary landfill in an urban region, and prepare an informational video to present findings Create a simulation of a meeting between heads of state from a world region to discuss water resources, water stress and sustainable economic development, and the effects of those issues on each representative’s area |

GEOGRAPHY

Interpersonal and Self-Directional Skills

(The Partnership for 21st Century Skills has emphasized these key learning skills, on pg. 9 in "Learning for the 21st Century")

(These are the 21st Century Tools that can be used to teach geography)

(These are a sample of the things that students will be able to do using the tools in column 2 to attain the skills in column 1.)

| Learning Skills for: Interpersonal and Self-Directional Skills | 21 st Century Tools for: Interpersonal and Self-Directional Skills | SAMPLE Student Outcomes for: Interpersonal and Self-Directional Skills |
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| <p><u>Interpersonal and Collaborative Skills</u></p> <ul style="list-style-type: none"> • Demonstrating teamwork and working productively with others • Demonstrating and the ability to adapt to varied roles and responsibilities • Exercise empathy and respecting diverse perspectives | <p>Internet, newspapers, global positioning system, database and spreadsheet programs, geographic information systems, books, presentation software, digital libraries, video production tools</p> | <p><u>By grade 4 students will be able to:</u></p> <ul style="list-style-type: none"> • Work on a team to prepare a video news report exploring key issues facing a particular world region • Rotate tasks on a data collection team: identifying, measuring, recording, reporting, etc. • Role play a town meeting where different members of the community ask questions about a local issue <p><u>By grade 8 students will be able to:</u></p> <ul style="list-style-type: none"> • Work on a team using a geographic information system to develop a community response plan in the event of a natural disaster • Work on a team to write and put on a play about immigrants to a new country struggling to deal with the issues involved in adapting to an alien environment • Write a dialogue between a farmer and a city water board administrator about the use of regional water resources <p><u>By grade 12 students will be able to:</u></p> <ul style="list-style-type: none"> • Work on a team to prepare a multimedia presentation on toxic and hazardous waste management at local and global levels (e.g., the movement, handling, processing, and storing of materials) • Use the Internet and digital libraries to prepare guidelines for humanitarian aid workers to assist them with the transition to living in a different culture • Prepare a panel simulation of participants who represent different points of view about sustainable development on the subject of cutting rain forests in response to a demand for lumber in global markets and the need locally for an income activity |
| <p><u>Self-Direction</u></p> <ul style="list-style-type: none"> • Monitoring one's own understanding and learning needs | <p>Maps, spatial databases, online mapping programs, remote sensing, geographic information system</p> | <p><u>By grade 4 students will be able to:</u></p> <ul style="list-style-type: none"> • Create an age-appropriate electronic portfolio of maps and other geographic projects, and write a reflective essay explaining how selected portfolio pieces reflect |

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| <ul style="list-style-type: none"> ● Transferring learning from one domain to another | | <p>what they have learned about specific topics</p> <ul style="list-style-type: none"> ● Use latitude and longitude data to track the movement of meteorological events such as hurricanes <p><u>By grade 8 students will be able to:</u></p> <ul style="list-style-type: none"> ● Create an age-appropriate electronic portfolio of maps and other geographic projects, and write a reflective essay explaining how selected portfolio pieces reflect what they have learned about specific topics ● Use satellite images to identify changes in a region's biomass over time <p><u>By grade 12 students will be able to:</u></p> <ul style="list-style-type: none"> ● Create an age-appropriate electronic portfolio of maps and other geographic projects, and write a reflective essay explaining how selected portfolio pieces reflect what they have learned about specific topics ● Collect appropriate data and use a geographic information system to monitor the spread of disease within a region |
| <p><u>Accountability and Adaptability</u></p> <ul style="list-style-type: none"> ● Exercising personal responsibility and flexibility in personal, workplace and community contexts ● Setting and meeting high standards and goals for one's self and others ● Tolerating ambiguity | <p>global positioning system, geographic information system, email (to submit assignments), electronic bulletin boards, online dialogs, historic maps, online map resources, online spatial databases and data sharing, presentation tools</p> | <p><u>By grade 4 students will be able to:</u></p> <ul style="list-style-type: none"> ● Establish ongoing communication with students from other countries (via letters, email, or electronic bulletin boards) to learn about how cultures are the same and different (e.g., language, clothing, music, activities, etc.) ● Develop and execute a plan to use global positioning system receivers and a geographic information system to collect and record accurate and complete data about trees around the school or in a park and share this spatial data with community foresters or other managers. ● Document and suggest reasons for changes in political boundaries and place names over time from observations of historic maps and/or online resources. <p><u>By grade 8 students will be able to:</u></p> <ul style="list-style-type: none"> ● Gather pertinent data from multiple sources to create a traditional or interactive map report on a specific region that explains one or more significant issues currently confronting that area. Submit report using appropriate channels (e.g., hand in manually; send as email attachment; or present orally) ● Actively participate in international investigation projects, such as GLOBE, in which student participants are held responsible for the quality of the data they submit ● Gather and critically analyze information from a variety of sources, and understand (and "tolerate") how and why data may not be consistent (e.g., from two different sources, the population of Los Angeles may vary from 3.5 million (within city limits) to nearly 10 million (metro area)) <p><u>By grade 12 students will be able to:</u></p> <ul style="list-style-type: none"> ● Create a high-quality digital map product, including data |

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| | | <p>that has been gathered in the local area, to submit to an agency outside the classroom (e.g., national contest, local newspaper, community member)</p> <ul style="list-style-type: none"> • Gather, map, and analyze data from police records (e.g., crime, accident, graffiti) and overlay other variables to detect and interpret any spatial patterns. Share results with community. • Use online bulletin boards to engage in discussions of controversial topics such as the environment, free trade, or population dynamics with people (students and/or experts) from around the world; demonstrate tolerance and respect for the points of view of others. |
| <p><u>Social Responsibility</u></p> <ul style="list-style-type: none"> • Acting responsibly with the interests of the larger community in mind • Demonstrating ethical behavior in personal, workplace and community contexts | <p>geographic information system, global positioning system, databases, presentation software, personal management tools, Internet-based projects (e.g., GLOBE), personal digital assistants</p> | <p><u>By grade 4 students will be able to:</u></p> <ul style="list-style-type: none"> • Propose and discuss specific actions that can help alleviate an environmental problem or relevant community issue and the likely consequences of such actions (e.g., recycling, biking to school, reducing consumption, buying local products, etc.) • Gather data from reliable Internet and traditional sources to describe and assess the impact of litter in the community. Students will design and implement a community service project (e.g., brochure, posters, etc.) to raise awareness of this issue. <p><u>By grade 8 students will be able to:</u></p> <ul style="list-style-type: none"> • Initiate and carry out a community mapping project whereby students, in collaboration with a community partner, use a geographic information system, global positioning system or other spatial tools to create a product for use in the community. This includes scheduling and keeping appointments. • Participate in simulation or role-playing activities in which students grapple with the ethics of complex issues, such as infant mortality or the refugee crisis. <p><u>By grade 12 students will be able to:</u></p> <ul style="list-style-type: none"> • Develop a strategy to substitute alternative sustainable activities for present economic activities in regions of significant resource depletion (e.g., fisheries and/or logging of the Pacific Northwest, extensive irrigation practices in desert climates) • Explain how evolving political and economic alliances affect the traditional cohesiveness of world culture regions and discuss ethical issues associated with the loss of diverse cultures. |