

Machu Picchu & the Inca Instructor Guide ' 2002 Digital Tech Frontier, LLC all rights reserved. Only those pages so designated may be reproduced for instructional use in an educational institution. Education Reality System and ERS are trademarks of Digital Tech Frontier, LLC.

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Instructor Guidelines

The Machu Picchu & the Inca learning node is designed for use at the secondary level to provide learners with a self-paced virtual reality experience. Learners are able to explore a geographic area they may have never experienced with the presentation of panoramic views that can be enhanced with a head mounted display and motion sensing tracker. Embedded fact files on various attributes of Machu Picchu, enable the user to interact with the software.

The accompanying study questions and problem-based projects can be used to guide student learning with the software. These activities support the learning objectives and the Arkansas State Standards outlined in this Instructor Guide.

The problem-based learning scenarios provide the learner with opportunities to apply inductive and deductive reasoning, cause and effect and creative thinking strategies. The question format is based on Bloom's taxonomy of intellectual behaviors. The six levels allow the learner to begin with simple recall of facts, as the lowest level, and move towards more complex mental levels such as synthesis and evaluation.

The duration of the program varies depending on the extent of its use. After an initial exploration, the instructor will decide which activities to assign to the students. The flexibility in the program addresses those learners who complete only the required assignments, as well as those who wish to explore it in more depth.

Machu Picchu & the Inca Background Information

Discovered in 1911 by Yale University Professor Hiram Bingham, Machu Picchu or Old Peak contains the best preserved Inca ruins in the world. Although Bingham was searching for the lost Inca capital Vilcabamba, he stumbled upon a city that went unnoticed by the Conquistadors who conquered the Inca Empire. Two thousand feet above the rumbling Urubamba river, the cloud shrouded ruins have palaces, baths, temples, storage rooms and some 150 houses, all in a remarkable state of preservation. The function of Machu Picchu remains a mystery. Some hypotheses include a retreat for the Emperor Pachacuti, a military citadel, secret ceremonial ground or training area for the priestesses or brides of the nobility. Regardless of its use, archeologists have learned a great deal about life of the Inca from the artifacts and architecture of Machu Picchu as well as the accidental ice mummies found in the nearby regions.

Instructional Materials

Machu Picchu & the Inca interactive software

Educational Reality System (ERS) hardware system including head mounted display with motion sensing tracker, flying mouse input device, keyboard & standard mouse, flat panel monitor, surround sound speaker system

Machu Picchu & the Inca Instructor Guide and project copying masters

Guidelines for Use

The Machu Picchu & the Inca learning node is designed for self-paced use within the classroom or computer lab setting. There are a number of different ways to organize use of the software. One or more students may use the software at a time. Although there is only one head mount display per workstation, the same image appears on the monitor. Therefore, students can take turns using the head mount and work in teams. Another option is to have students work independently with the software, and in groups for the accompanying projects. The instructor can develop a sign-up sheet for scheduling rotation of the students. Students should be allowed some exploration time to get used to the structure of the learning node and feel of the head mount, before they are required to complete assignments. The copying masters found in the back of this guide are designed to accompany learning at each level of Bloom staxonomy.

Arkansas State Standards for Grades 9-12

The Machu Picchu & the Inca learning node addresses the following Arkansas State Standards for grades 9-12.

Social Studies

Strand 1: Time, Continuity and Change

TCC.1.4. Link historical events region to region along timelines.

TCC.2.1 Investigate cause and effect as a historical concept.

Strand 2: People, Places and Environments

PPE.1.1. Analyze and illustrate connections and interactions of individuals, groups, institutions, states and nations.

PPE.1.5. Assess the ways family, religion, gender, ethnicity, nationality, socioeconomic status, and other group characteristics contribute to the development of a sense of self.

PPE.1.8. Explore cultural perspectives by applying techniques such as brainstorming, data analysis, simulations, and scenario writing.

PPE.2.5. Investigate ways that natural or man-made environments interact with culture by using a variety of experiences such as field studies, interactive technologies, works of literature and the arts

Strand 3: Production, Distribution, and Consumption

PDC.1.5 Apply economic concepts and economic reasoning to historical and contemporary social and political development.

PDC.1.8 Compare how values and beliefs influence economic decisions in different societies.

Strand 5: Social Science Processes and Skills

SSPS1.1. Integrate reading, writing, listening and speaking skills throughout the social sciences.

SSPS1.2. Develop and enhance observation, questioning and interpretive skills throughout the social sciences

SSPS1.3. Develop and enhance critical analysis skills, such as cause and effect and inductive and deductive reasoning throughout the social sciences.

SSPS1.4. Employ creative thinking skills throughout the social sciences.

SSPS.2.5. Draw inferences.

SSPS.2.6. Use appropriate tools, such as globes, maps, statistical data, primary historical sources, relevant media resources, interactive technologies, and field studies, etc.

Arkansas
State
Standards for
Grades 9–12
(continued)

Language Arts

Strand 1: Writing

- W .1.4. Synthesize information from a variety of sources, such as traditional print, word processors, spreadsheet, graphic software, Internet, etc.
- W .1.5. Write in response to new learning in a variety of forms.
- W .1.6. Write to persuade, to defend, to inform, and to explain from thoughts experience and research.
- W .1.6. Write show knowledge of cultural diversity.
- W .1.8. Write for real or potentially real situations such as job applications, business letters, college applications.
- W .1.10. Construct from text a statement of central purpose and theme.
- W .1.12. Gather research data from a variety of traditional and electronic sources to formulate, substantiate, or refute opinions or theories.
- W .1.17. Revise writing for clarity, coherence, economy, syntax, and style.
- W .1.18. Share writing through peer/teacher feedback sessions, exhibitions, classroom displays, multimedia publications, and contests
- W .2.2. Edit writing for appropriate mechanics and usage.
- W .2.5. Synthesize research data into an original work and present that work in a developmentally appropriate manner, such as reports, annotated bibliographies, research papers, multimedia presentations, etc.

Strand 2: Reading

- R.1.3 Read and analyze a variety of materials for academic and other purposes, e.g. science journals to illustrate current trends in science, biographies to provide understanding of historical events, etc.
- R.1.8 Articulate the central purpose or theme of a text.
- R.1.10 Gather research data from a variety of traditional and electronic sources to formulate, substantiate, or refute opinions or theories.
- R.1.16. Apply critical thinking skills in interpreting text, e.g. inferencing, comparing/contrasting, analyzing, evaluating.
- R.1.17. Respond critically to what has been read, e.g. conduct panel discussions, participate in group discourse, generate ideas, develop position papers, create models.
- R.2.4. Use the library, the Internet, and other sources of information gathering tools to develop informed opinions and make decisions in order to achieve educational and employment goals.
- R.2.5. Use electronic media for language arts purposes.
- R.2.6. Use the Internet appropriately for information gathering and problem-solving.

Strand 3: Listening, Speaking and Viewing

- LSV.1.2. Express and logically defend one's ideas.
- LSV.1.6. Use graphics and supporting audio-visual media.
- LSV.1.13. Evaluate information from a variety of sources.

Instructional Objectives

After exploring the Machu Picchu & the Inca learning node and completing the related activities, students should be able to complete assignments associated with the following learning objectives. The objectives and their level within Bloom staxonomy are shown below:

Knowledge Level:

- The learner will list the functions of the Inca waterworks system.
- The learner will identify operational features of the waterworks system.
- The learner will name characteristics of the Inca Empire.
- The learner will list functions of the Inca road systems.
- The learner will list characteristics of Inca agriculture.
- The learner will identify features of Inca architecture.
- The learner will identify elements of arts and recreation in Inca society.

Comprehension Level:

- The learner will describe how the waterworks system was adapted for different regions.
- The learner will explain how the road systems were adapted for different regions.
- The learner will describe the construction techniques used by the Inca.
- The learner will explain characteristics of Inca religion.
- The learner will summarize the process of stone working.
- The learner will explain the Inca class system.
- The learner will describe the Inca economic system.
- The learner will explain the communication system used by the Inca.

Application Level:

- The learner will create a scrapbook to explain how the Inca were conquered.

Analysis Level:

- The learner will compose an autobiography of Juanita, a mummy found on Mount Ampato.

Synthesis Level:

- The learner will write an article for the National Geographic Traveler magazine.
- The learner will design a web documentary of the history of the Inca.

Evaluation Level:

- The learner will evaluate the impact of development at Machu Picchu.