

3-6 Curriculum

Curriculum Overview

The student projects provided with the 3-6 Curriculum kit have been designed to help make it easy for you to integrate the kit software and the latest Apple technologies into your curriculum. The projects serve as models for the effective use of technology, utilizing a collaborative, project-based, and interdisciplinary approach to learning. You can adapt any of the projects to create a perfect fit with your curriculum, or you can explore a project with your class just as that project appears here.

Technology can be a catalyst for change in the classroom. If students are to reap the greatest benefits from technology, it is critical that lessons, activities, and the classroom environment as a whole be adapted to address the changes that technology can bring about. The goal in offering these materials is to give you instant access to Apple Computer's years of experience in the integration of technology into the classroom environment.

This overview contains the information you need to make the most of the software, resources, and student projects in 3-6 Curriculum. A brief description of each section is described here:

- “Themes and Projects” introduces the three interrelated themes that students can explore through the 12 student projects.
- “Components of a 3-6 Curriculum Project” describes the elements included in every project and guides you in how to think about and use them.
- “The Unit of Practice” outlines a framework for thinking about and developing technology-rich activities that was developed through the Apple Classrooms of Tomorrow project.
- “Managing Student Use of Computers” discusses the factors that influence students’ use of technology in the classroom.
- “Step-by-Step Cards” provides a list of the Step-by-Step Cards that are included with 3-6 Curriculum and offers suggestions for how to use them with your students.
- “Project Templates” describes the templates that are provided to help make it easier for you to implement the projects.

Reading this overview will enhance your understanding of the materials included in the kit and help you shape your own curriculum to benefit from the new tools available in your classroom.

Note: If you purchased this kit with a new iMac computer, you have received additional software CDs, such as AppleWorks. The specific CDs included may vary depending on the model of iMac. The curriculum materials include the use of some of these CDs. If you do not have a product used in the student projects, you can substitute another CD of the same type. For example, you can use a different encyclopedia CD for World Book Encyclopedia or another Web page editor for Adobe PageMill, such as Netscape Composer which is included on the iMac.

Themes and Projects

The projects in the 3-6 Curriculum kit are organized around the idea of community to give students a chance to learn how communities structure life within them, how they interact with other communities, and how they redefine themselves through innovation. These broad concepts have been divided into three themes, each represented by four detailed projects that also connect to traditional subjects in the grade 3 to 6 curriculum:

- **Architecture:** In this unit, concerned broadly with structure and the relation of parts to the whole, students investigate rainforests, governments, and natural and human communities.
- **Migration:** The projects in this unit involve the exploration of movement in time and space, and include investigations of the movement of electrons, people, animals, and technologies.
- **Navigation:** The projects in this unit are all connected to the idea of finding one's way. They range from the creation of a navigation museum to the building of a labyrinth through which others must navigate.

Brief descriptions of all 12 projects appear in “The Projects at a Glance” at the end of this overview.

Components of a 3-6 Curriculum Project

The projects included in 3-6 Curriculum have been designed to be adapted and used by teachers everywhere, teaching with different styles in all kinds of situations. To help you create the perfect fit between these projects and your classroom, the projects include a wealth of specific steps, optional ideas, and circumstances and events to anticipate. This section discusses the different components that appear in each of the projects.

The Unit of Practice

The Unit of Practice previews a project and describes the tasks, tools, and other considerations necessary to successfully implement the project. See “The Unit of Practice” section, later in this overview, for information regarding the seven components that are part of every Unit of Practice.

The project

At the beginning of each project, an introductory section titled “The Project” introduces the project, identifies the overall tasks that students are asked to accomplish, and provides the context of ideas, imagination, and organization that surround investigation of the project.

The phases of the project

Every project is described in phases—usually four in number—that outline the major steps students will take to complete and present their work. A phase might have students explore software to get an idea of the relation of the project to its context; brainstorm and create lists; carry out research using CD-ROM, Internet, and library resources; write, graph, map, draw, or compile information and ideas for presentation; or review and revise written work.

Technical tips and hints

Check this section before your class begins work on a project: in it are descriptions of how to perform specific tasks in the relevant software titles, as well as detailed research paths to guide students in their electronic research. Also mentioned here are challenges to anticipate and ways to get the very most out of the technology in your classroom.

Vocabulary

Following the description of a project's phases is a list of words that you might want to discuss with your students. In many cases, students will know these words in some usage; the words' nuances, however, and concepts that underlie them, may deserve additional attention.

Preparation

This section typically includes suggestions for literature to read to the class, ideas for discussion, materials you'll need to collect, Internet search topics, and other steps you'll want to consider as you lay the groundwork for a project.

Options and extension activities

This section features ideas for extending and adapting projects. Variations included here address the needs of different grade levels; alternative uses of classroom resources and technology; additional activities or ways of modifying projects that you might want to consider; and classroom management suggestions.

The home-school connection

Every project features a section offering you specific ideas to help connect family members to the work in your class. In many cases, family members can serve as valuable sources of information, telling students about their lives, their work, and their observations, and about the lives of their ancestors. When these stories connect to what's happening in the classroom, students are inspired.

Many of the activities described in "The Home-School Connection" sections can be used as introductory activities, stirring students' imaginations and setting the stage for the project that is about to take place in your class. Other activities include families at the conclusion of projects by describing ways students can share their completed work.

Resources

At the end of each project is a list of books, Internet sites, and other resources that will enrich your students' work on their projects. The projects themselves will bring to mind many more ideas for books, videos, music, Web sites, and other materials—your favorites and those of your students—that will make each project an even more rewarding educational experience.

The Unit of Practice

The Unit of Practice (UOP) is a framework that educators can use to manage change in their curricula by analyzing and weighing key variables that influence learning. The UOP was developed by the Department of Education at the University of California at Los Angeles, in conjunction with researchers in the Apple Classrooms of Tomorrow who examined the effects of the influx of computer technology into classrooms, and the challenges that this influx could pose for teachers.

The UOP is simple to implement. It consists of seven components with familiar roles in classroom education that must be rethought to ensure classroom activities utilize the unique features that technology can bring to student learning. The seven components are described here:

- **Invitation** What the teacher is inviting the students to learn and do, stated as a set of questions laying out the challenges the teacher will address in carrying out the project.
- **Tasks** What the students will be asked to do, whether one simple assignment comprising a single task, or a complex assignment made up of several tasks.
- **Standards** The state-level curriculum standards and national student technology standards that are addressed in the project.
- **Interactions** The ways in which the students will work: individually or in small groups, with aides and the teacher, with family members, or with students in other classes. Includes who within the school, district, or community the teacher needs to work with in order to facilitate the activity.
- **Situations** The places and the scheduled times needed for students to complete the project.
- **Assessment** The content-based and technology-based criteria by which the students' work will be evaluated.
- **Tools** The resources and materials, including technology, that the students will use to approach their tasks.

The components of the UOP can be examined in any sequence, because a change to any one of them will, as it does in the classroom, produce change in the others. If, for example, you change the tasks involved in a project, such as stipulating that a report include a spreadsheet or graph, then you've added a math skill to the educational standards that the report will satisfy.

The UOP was developed as a tool for effecting change, and change is often the result of collaboration and communication. One of the primary benefits of the UOP is that it acts as a matrix that teachers can use to discuss classroom activities with other teachers, and to collaborate on the development of new activities.

Managing Student Use of Computers

The way you set up and use the 3-6 Curriculum kit will vary according to your style of teaching, the grade level of your class, the number of computers available, and even the project the class is engaged in. Effective classroom management entails anticipating and influencing the ways students will use the computers to complete their assignments. Some issues you'll want to think about in advance are how students will save work in progress, the completion times for projects, the division of time on the computer and time off the computer, the proportion of small group work to individual work, and methods of backing up files on your computers.

Structuring projects and classroom schedules

Structuring computer use in a given assignment—stipulating what part of the work is to be done on the computer, and what part done off the computer, such as researching in the library, writing in a journal, or constructing a model—is a key means of influencing the time students will take to complete an assignment. In a class with access to many computers, you can reduce the time a project will take by requiring that all research be done on the computer, using the Internet or CD-ROM resources such as World Book Encyclopedia. The same requirement in a class with few computers, however, will result in a backlog of students waiting to use them, possibly turning the research phase of the project into a bottleneck.

In the “Situations” section of the Unit of Practice for each project, an estimate is provided for how long it will take to implement the project. This estimate is based on a scenario of four computers available in the classroom. In addition, the period of time a project requires will vary depending on how deeply you, the teacher, want the class to explore the subject and its offshoots. Also, the number of computers available to students, the type of work students are producing, and the amount of time they are given daily or weekly to work on a project are all factors that affect the time it will take to complete the project.

One of the hallmarks of a classroom computer is the way it facilitates cooperative learning in small groups and pairs. The computer makes it easy to save work for elaboration by a partner, to revise writing after a peer review, or to join with others in exploring a simulation. The 3-6 Curriculum projects emphasize a balance of group, pair, and individual work, but again, you're advised to adapt the projects as necessary to effect a balance in your classroom that leads to efficient and smooth operations. A project that asks each individual student to create a multimedia presentation on the computer may require a great deal of time to complete; such a project will also require a creative way of presenting student work to the class.

Step-by-Step Cards

Included with 3-6 Curriculum is a collection of Step-by-Step Cards that provide detailed instructions for doing project-related tasks using the software in the kit.

The cards are designed to help students work independently with the software. They can be downloaded and printed. You may want to laminate them and have them available near the computers in your classroom for easy access.

The Step-by-Step Cards included in 3-6 Curriculum are as follows:

- Making an E-Book With Destination: Time Trip, USA
- Using the Explore Mode in Zap!
- Using the Journal in A Field Trip to the Rainforest Deluxe
- Starting With a Blank Map in Mapmaker's Toolkit
- Searching World Book Encyclopedia
- Making a Presentation With AppleWorks 6
- Using the Drawing Tools in AppleWorks
- Creating Tables With AppleWorks 6
- Using the Mac OS 9 Help Center
- Searching With Sherlock 2
- Adjusting System Settings in the Multiple Users Environment
- Finding Clip Art and Photographs on the Web
- Customizing a Map and Creating a Presentation With Mapmaker's Toolkit

Project Templates

Also included with 3-6 Curriculum are project templates designed to make it easier for you to implement the projects. These templates can be used as is, or customized to better meet the needs of your students.

The following templates are included with 3-6 Curriculum:

- Sample Virtual Labyrinth for use with the "Tangled Web" project
- Sample Math Migration Game for use with the "Migration Math Games" project
- Storyboard Template and Storyboard Example for use with projects that include multimedia presentations
- Multimedia Development Checklist for use with designing multimedia projects
- Multimedia Presentation Checklist for use with preparing to present multimedia projects
- Multimedia Project Rubric for use with assessing multimedia presentations
- Web Page Design Checklist for use with designing Web pages
- Web Page Construction Site provides instructions for creating Web pages

The Projects at a Glance

Architecture

Structure of a Natural Community

Students observe the plants and animals in research sites—small areas of a park, their neighborhood, or school grounds—and record what they observe in writing, pictures, and quantitative data. After looking at the growth and change of the plants over a period of time, recording these changes on spreadsheets, and speculating about the changes that may happen over longer periods of time, students publish their ideas and information as reports and as a project Web site.

The Rainforest at Risk

Students prepare for and implement a dynamic Town Meeting to address a proposal to log the tropical hardwood trees in a rainforest and then mine the mineral wealth in the earth below. Students work in teams to play the roles of Logging and Mining Company Representatives, Botanists, Indigenous People, and Wildlife Conservationists; they then come together in the Town Meeting to discuss the issues and decide on a plan of action.

Communities Across Time

Students research their own community in the present to learn about what makes up a community, and then investigate community life in six different time periods of United States history, creating multimedia electronic books to represent each period. Taken together, the electronic books chronicle the evolution of community life in the United States.

Architecture of a Government

Students learn about the issues faced by the Founding Fathers and research the structure and principles of the government the delegates put together during the Constitutional Convention. Students then take part in a class constitutional convention in which they create a class government modeled on the architecture of the U.S. government.

Migration

Packing Up 100 Pounds

Students imagine that they're about to immigrate to another country, and have to decide what to pack. Using a spreadsheet, each pair of travelers creates a categorized packing list of items that will weigh no more than 100 pounds. Students then write short stories to chronicle their travels.

Inventions That Changed Our Lives

Students celebrate the power of innovation and invention by staging an Invention Convention. Divided into five teams representing different time periods—the Beginning of Science, the Industrial Revolution, the Steam/Electric Age, and the Silicon Age—students research the significant inventions of the time they are studying and make presentations describing the impact of those inventions on daily life.

Migration Math Games

Students explore an interactive multimedia mystery to gain familiarity with the construction of word problems and practice solving them. Students then create their own word problems based on the mathematical aspects of a species' seasonal migration, which they string together with hypertext links to create a “migration game” for others to play.

Electrons in Motion

Students explore electrical principles, apply what they learn in the construction of virtual electrical circuits, and then write and tell stories about their circuits from the point of view of electrons traveling in them.

Navigation

Storytelling Signposts

Students examine favorite stories from the different cultures represented in their community. The whole class reads and compares stories, looking for similarities. Then small groups meet to continue discussion and to write a new version of a favorite story, set in their community.

Navigation Museum

Students imagine that they're curators at a museum devoted to showcasing improvements in humans' ability to find their way from place to place without getting lost. Each pair of curators proposes and creates an exhibit about a navigation tool, a kind of map, a voyaging craft, a famous navigator, a mapmaker, or explorer. Curators then work together to combine their exhibits into an actual museum visited by people from outside the classroom.

Tangled Web

Groups use the two basic structural units of the World Wide Web, the page and the hyperlink, to create a virtual labyrinth that other students can explore as a challenging game. The labyrinth is constructed of Web pages, each of which contains links that both bring the player closer to the final, hidden page, as well as divert the player from this final goal. Groups set up these pages so that determining which link is best is a matter of figuring out a riddle, solving a problem, or finding the answer to a question about science, language arts, math, or history.

Navigators' Beacon

Students work in small groups to design lighthouses and situate them in time and space. They create beacons of light and sound appropriate to an historical period they choose, decide where the lighthouse should be located, and draw up scale plans for the lighthouse's construction.