# Educational Software Tools

**Discover some of the best educational tools that make the process of teaching and learning easy and interactive. The DVD has some useful software for businesses too**

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## NASA World Wind

World Wind is an Open Source virtual globe developed by NASA and the Open Source community for use on personal computers. It comes in two versions—.NET and Java.

World Wind Java is a software development kit that is aimed at developers and is not a standalone virtual globe app in the style of Google Earth. It includes a suite of basic demo apps. The program overlays NASA and USGS satellite imagery, aerial photography, topographic maps, Keyhole Markup Language (KML) and Collada files.

The software comes with an extensive suite of plugins. Apart from the Earth, there are several worlds in World Wind, including Moon, Mars, Venus, Jupiter (with the four Galilean moons of Io, Ganymede, Europa and Callisto) and SDSS (imagery of stars and galactics). Users can interact with the selected planet by rotating it, tilting the view, and zooming in and out. Names of five million places, political boundaries, latitude/longitude lines and other data can be displayed.

World Wind.NET provides the ability to browse maps and geospatial data on the Internet using OGC's WMS servers (version 1.4 also uses WFS for downloading placenames), and import ESRI shapefiles and kml/kmz files.

Other features of World Wind.NET include support for DirectX 3D polygon mesh models and advanced visual effects such as atmospheric scattering or sun shading. World Wind uses digital elevation model data collected by NASA's Shuttle Radar Topography Mission, National Elevation Dataset, and Advanced Spaceborne Thermal Emission and Reflection Radiometer. This means one can view topographic features such as the Grand Canyon or Mount Everest in three dimensions. In addition, World Wind has bathymetry data, which allows users to see ocean features, such as trenches and ridges, in 3D.

Many people using the applications are adding their own data and making them available through various sources such as World Wind Central. All the images and movies created with World Wind using Blue Marble, Landsat or USGS-public domain data can be freely modified, re-distributed and used on websites, even for commercial purposes.

## ATutor

ATutor is an Open Source Web-based learning management system used to develop and deliver online courses. Administrators can install or update ATutor in minutes, develop custom themes to give ATutor a new look, and easily extend its functionality with feature modules. Educators can quickly assemble, package and redistribute Web-based instructional content, easily import prepackaged content, and conduct their courses online. Students learn in an accessible, adaptive, social learning environment.

ATutor includes a variety of features to ensure that the content is accessible to all the potential users, including those with slow Internet connections and older Web browsers, and people with disabilities using assistive technologies to access the Web.

Some of these features include bypass links, access keys, accessibility verifier, alternative text, alternative navigation, resume, menu hiding, search/sort and form labels.

## Chamilo

Chamilo is an Open Source (under GNU/GPL licence) e-learning and content management system, aimed at improving access to education and knowledge globally. It is backed by the Chamilo Association, which has goals including promotion of the software, maintenance of a clear communication channel, and building of a network of services providers and software contributors.

The Chamilo project aims at ensuring the availability and quality of education at a reduced cost, through the distribution of its software free of charge. Chamilo is implemented in a way that allows teachers to choose between a series of pedagogical methodologies, one of which is social constructivism.

Chamilo has good documentation resources available on content aggregation websites.

## eFront

eFront is an Open Source e-Learning platform, also known as a course management system or learning management system. It is designed to assist in creation of online learning communities while offering various opportunities for collaboration and interaction through an icon-based user interface.

The platform offers tools for content creation, test building, assignments management, reporting, internal messaging, forum, chat, surveys, calendar, etc. Useful features include user management, lessons, courses, curriculum and categories management, file management, exam builders, assignments builders, communication tools, progress tracking, authentication methods, enrollment methods, certifications and report generators. Users can add extra functionality by using the modules.


*Fig. 1: NASA World Wind*

Additional features include payment integration and social networking tools.

eFront runs without modification on GNU/Linux, Microsoft Windows, and any other operating system that supports PHP 5.1+ and MySQL 5+. The platform is built using the object-oriented programming paradigm. Its architecture is based on the 3-tier design approach separating the system's presentation from its logic and data. The platform is maintained through a community-driven process. This leads to small development cycles that produce incremental improvements to the system, followed by bigger development cycles that integrate features requiring architectural changes.

## Programming Without Coding Technology

Programming Without Coding Technology (PWCT) is a software development tool that allows computer users to create any software they need without previous knowledge of computer programming. Unlike other visual programming languages, PWCT is not limited and targets professional and mainstream programmers by giving them more productivity than traditional text-based programming languages.

PWCT is an Open Source visual programming language framework to create and use general-purpose visual programming languages wherein the programmer need not write code but can visually specify every functional aspect of the program similar to flowcharts and algorithms. It comes with four general-purpose visual programming languages—HarbourPWCT, PythonPWCT, C#PWCT and SupernovaPWCT.

PWCT includes a new visual programming method (instead of drag-and-drop) called coding simulation method, HarbourPWCT visual programming language, DoubleS (Super Server) programming paradigm for the HarbourPWCT visual programming language, PythonPWCT visual programming language, Supernova textual programming language developed using the HarbourPWCT visual programming language, SupernovaPWCT visual programming language and CSharpPWCT visual programming language.

## Celestia

Celestia is a 3D astronomy program based on Hipparcos Catalogue that allows users to travel through an extensive universe, modeled after