

Science.

Technology.

Innovation

Pachelbel[©]

A new approach to e-Learning

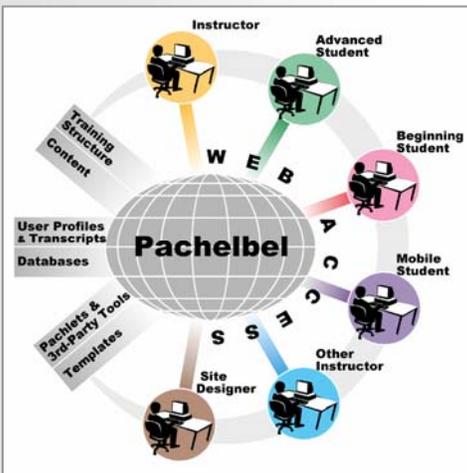
In recent years, e-Learning has become a popular, cost-effective alternative and supplement to traditional classroom instruction. Through e-Learning, travel costs for students and instructors are eliminated and the time to complete training is usually dramatically reduced. However, with many e-Learning systems, instructors are not provided the means to create and deliver the level of instruction that they would in a classroom environment. Likewise, there is often very little support for student learning styles, “hands-on” instruction, and exploration. The result is that students’ needs are not met and quality learning does not take place. The Pacific Northwest National Laboratory (PNNL) has been working to remedy these shortcomings by providing an innovative learning management and delivery system called Pachelbel.

Pachelbel provides instructors the ability to develop courses that are tailored to the needs of individual students while simplifying course content development and providing the flexibility needed to support instructional approaches suited to both the teachers and the students. These courses can then be delivered as Web-based or standalone, CD-based training.

Student-Centered Learning

When a student registers for a class and then proceeds through lessons managed by Pachelbel, key information about that student is collected. Students may provide information about their particular roles, experience level, location, etc. Alternatively, instructors may assign this information to each student before registration. In addition to this user profile information, Pachelbel tracks the student through every page visited, monitoring how the student is navigating the system, what pages, lessons, and courses have been visited and completed, and where the student currently is within the training. At every step, Pachelbel uses everything it knows about the student to determine not only which content it should display but also *how* that content should be displayed. The entire page design and individual elements of each page can be altered on the fly to better accommodate the student’s current needs and learning approach.

For example, if a student is progressing through a lesson in a strict sequential manner, Pachelbel will provide content and navigation elements that best support the sequential approach the student is taking. If that student decides to navigate through the material non-sequentially (e.g., jumping from page to page via search results of desired topics), Pachelbel can restructure the material to provide additional, contextual information, helping the student more fully understand the content at that particular point. If that same student later revisits course or lesson materials already completed, Pachelbel can automatically display the content in a reference format so that the student can quickly find refresher information without having to navigate through the course or lesson again.

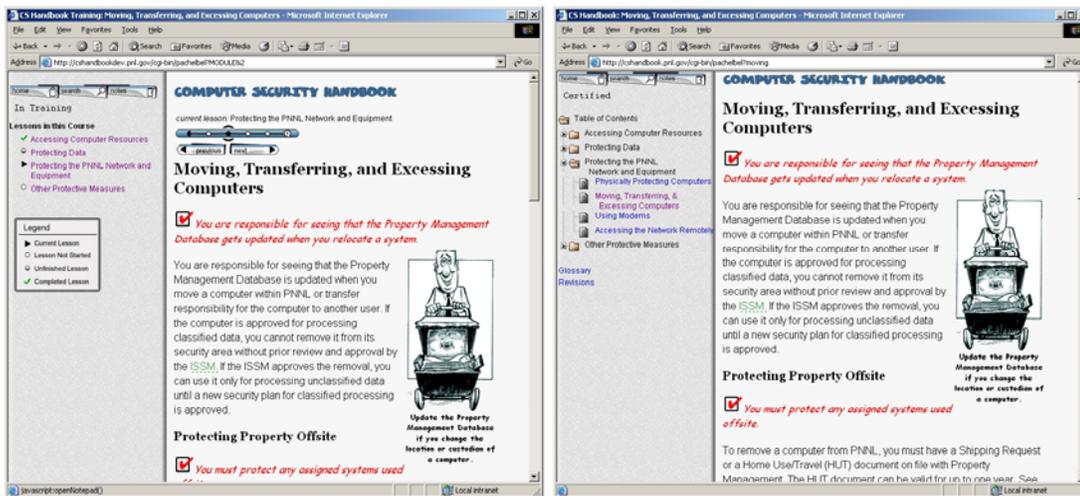


PNNL’s Pachelbel Learning Management System is SCORM 1.2 conformant.

Pacific Northwest National Laboratory

Operated by Battelle for the U.S. Department of Energy





Pachelbel can modify the format of a page based on the student's role, history, and current mode of navigation within the system. The leftmost image shows a page as it would appear while the student is in training. The image on the right shows the same page after training is complete, reformatted to provide the information in a reference mode. This is accomplished automatically and does not require the author to duplicate or reformat the content.

Ease of Use for Instructors and Designers

A key feature of the Pachelbel framework is that the instructional content is kept separate from the “look and feel” of each page. This means that content developers do not have to be familiar with web page design or site navigation structures and site designers do not have to also serve as content developers. Pachelbel determines the layout of each page from a small set of templates. This allows designers to rapidly modify and deploy new site designs by modifying a handful of templates, all without the need to change any of the instructional content. Content developers can then focus on what they do best and tools are provided to make their jobs even easier.

All pages in Pachelbel can be created and modified with an easy-to-use, web-based editing tool. Likewise, courses, units, and lessons can be developed and organized in a simple web form. Previously developed content can be reused with little effort. In most cases, if content for a course already exists, it can be copied and pasted into Pachelbel's web-based editor, thus minimizing the cost of transitioning from legacy training materials. Once the content is in the system, the instructor can begin piecing together new lessons and courses, complete with integrated student testing.

Modular for More Flexibility

Since its initial design in 1994, Pachelbel has been developed with a strong emphasis on modularity. The system makes use of small plug-ins (called Pachlets) that add functionality to any training application. Pachlets serve many purposes. They can be used to provide a broad variety of capabilities (such as a note pad, a dynamic glossary, a student progress meter, etc.) to any training system. An unlimited number of Pachlets can be created and then added or removed from the system, providing a high level of customization.

Pachelbel also can be configured to communicate with existing database systems, web servers, e-mail applications, etc. Data from these external systems can then be included in the Pachelbel training material.

Supplemental tools and optional features are included with Pachelbel to support highly interactive, scenario-based instruction. This capability can be used to deliver “hands-on” activities in training that would normally be available only in a traditional classroom environment.

Proven Technology

Pachelbel has been used to deliver a wide variety of training courses for several years. Past customers include the US National Security Agency, the

US Army, the DOE Office of Cyber Security and Office of Science Education, and the Rehabilitation Learning Center in St. Louis, Missouri. PNNL uses Pachelbel to deliver and manage internal computer security training courses to nearly 4000 staff members, interns, and visitors to the Lab.

Pachelbel is a SCORM 1.2 conformant learning management system. Course content developed with Pachelbel can be exported as SCORM-conformant packages.

Licensing Opportunities

We welcome discussions involving the licensing of Pachelbel or partnerships to create customized training. Pachelbel is available at no cost to U.S. federal government agencies and organizations utilizing Pachelbel on a U.S. federal government contract.

For more information, contact

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