

Introduction to the Shadow netWorkspace™

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ABSTRACT

Shadow netWorkspace™ (SNS) is a web-based CSCL environment designed and developed specifically to support schools and learning. SNS has been designed to facilitate the implementation of a learning community, wherein members (teachers, students, parents, etc.) have tools for representing, organizing, sharing and collaborating on their thoughts and efforts. The SNS environment may be installed locally for the learning community whether that is a school building, school district or consortium of teachers or schools collaborating on implementing a cross schools project. SNS is being provided for free, has an Application Programming Interface (API) so others can develop applications for it, and is open source so that everyone can participate in enhancing and supporting it. SNS includes tools such as secure login, well-defined user roles and group types, file system, calendar & task manager, chat & discussion boards, notes & document creator, and homework notification. The system's strength and potential for longevity lie in its Open Source (GNU Public License) development model, object and process oriented operating environment, and a robust application programming interface (API). Many schools (internationally) have downloaded SNS for trials and a number are currently engaged in pilot programs.

Keywords

Collaborative Network Learning, Open Source, Online Operating System, CSCL Infrastructure, netWorkspace

INTRODUCTION

Shadow is an Internet-based workspace designed to support the processes of learning and schooling. A quick and rough analogy is to imagine the desktop of your computer existing on the Internet. Using a browser, such as Internet Explorer or Netscape, you connect via a secure login to a SNS web-site and your personal netWorkspace. Here you find a desktop for accessing your files and applications. (Laffey et al. 2000)

There are many Network Learning Systems (NLS) both in existence and under development. Getting familiar with other systems can help you to understand SNS. Please refer to sns.internetschools.org in the publications section for a document entitled Systems Similar to Shadow netWorkspace for up to date NLS comparison information.

SNS is a server-side operating system, designed to be installed and operated within a local school to support an online learning community. In this way the school or community "owns" the Shadow implementation. They create the rules and policies, establish membership, add or remove software applications, and make it their own customized implementation. Ease of implementation and use is key to the success of SNS for school improvement. The hardware requirements for setting up and running this server will cost schools less than \$1000 and most schools may simply designate an older Pentium-class computer to run the system.

The goal of the Shadow netWorkspace is to increase the capability of the students and teachers in a school/learning community to gain and process information and build and represent knowledge. A school-centered netWorkspace should facilitate the creation of artifacts representative of knowledge, and provide simple means to access, share and collaborate around those artifacts/representations.

EXTENSIBILITY & LONGEVITY

Shadow optimizes representation of learning and work in a networked environment, but is flexible enough to handle multiple methods of collaboration or learning. The learning/teaching method needs to be a local decision, allowing integration into other aspects of the local community. Computer support for methods of learning are expected to evolve as communities and developers experiment and refine new forms of learning and collaboration.

Therefore, we believe that it is important that a networked learning system evolve or be customized over time to be "useful" to the individual or community, rather than be simply a "usable" tool for some function that limits the flexibility for adaptation by the individual or community.

SNS is being developed as an Open Source project, which means that users will not have to pay to use the system. The Shadow networkspace operates on a Linux-based server and utilizes the Apache web server, MySQL, and Sendmail (All free software). The server-side operating system framework, application programming interfaces and core applications are written in Perl. As Open Source software, SNS is positioned to improve and evolve as more people implement and develop the system.

Developing sophisticated applications for the WWW is very challenging. There are many code snippets and technical how-to articles available, but web development is very different from traditional application development. The design of SNS as an operating system rather than a web-learning application provides a framework that simplifies the development and deployment of web applications. SNS also provides a secure consistent interface to these applications, with predefined individual roles and group structures with predefined rules. Thus bringing some of the favorable aspects of traditional application development to the fingertips of web-based application developers.

To illustrate how a web-based operating system designed to support learning would be useful to a school, consider this scenario. Lets say there are 10 schools that want to create new online communities and they each have small grants to hire a programmer to create their web-based environment. All 10 need to create a site where users need to login to the system and be treated appropriately based on their user type; 9 of the 10 want to have discussion boards; 8 of the 10 want to have chat rooms; and 7 of the 10 want some sort of file sharing. Each school has a different idea of how they would like to use these tools once their environment is built, but must wait for months of development before they can even begin to use their systems for implementing their online learning strategies. That's hundreds of hours of wastefully redundant effort. Wouldn't it be nice if there was a stable platform to start at? A platform that can provide all the base functionality schools are looking for and free-up their developers to begin working directly on applications that address pedagogical issues and learning strategies. Wouldn't it be nice if the platform simplified server-side programming so that developers had a robust library of system functions to rely on?

Programming a learning application within SNS involves utilizing preexisting system objects and defining new objects and processes to directly support a specific pedagogy. Discussion Boards and Chat Rooms can be associated with and accessed via groups. Programming for data input, display, and manipulation can be handled in an object-oriented manner with a rich set of system resources.

VISION

The vision for SNS includes the development and sharing of new pedagogical content, strategies and custom applications among the extended SNS community. Each local school or district owns their own community and they actively participate in the advancement of the global SNS community. As webquests are created in one locale, teachers elsewhere can share their strategies and applications to support group projects and learning. Currently, educators can share simple webquests via email, but SNS supports the sharing of full-fledged applications with secure roles and advanced file and data handling.

The idea is to employ two layers of Open-Source development: the first, the NLS, will function as a web-based operating system full of community support functionality, and the second, the core and custom applications and learning tools, will operate as processes and exist as content within the NLS to support specific learning and working strategies. The power is revealed when you consider an Open-Source NLS that supports the development of Open-Source applications that will operate within the freely and widely available web-browser platform.

REFERENCES

Laffey, J., Musser, D. & Espinosa, L. (2000) Shadow netWorkspace Learning Systems Project. *Proceedings of the International Workshop on Advanced Learning Technologies*. (Palmerstown North, New Zealand), IEEE Computer Society. pp. 188-189.