CERIAS K-12 Outreach Program
An Overview

The CERIAS K-12 Outreach Program mission is three fold: to increase the security of K-12 information systems, integrate information security as a discipline into the K-12 curriculum, and to raise parent and community awareness of information security issues through K-12 schools. Building upon existing work, the program will continue to grow and fulfill its mission through collaboration with K-12 schools in the state of Indiana, outreach entities on the Purdue University campus and nationwide, Indiana Service Centers, and CERIAS sponsors.

This document highlights current outreach efforts and initiatives. If you are interested in pilot testing new or using existing materials, partnering, or if you would like to learn more about the CERIAS K-12 Outreach Program, please visit our website at

www.cerias.purdue.edu/k-12/

or email us at

k-12outreach@cerias.purdue.edu.

Goal 1: Community Awareness through K-12 Schools

While there is a significant need across public and private sectors for educating and distributing information to the users and administrators of information systems, home users are particularly isolated from awareness and training opportunities in information security. It is our mission at CERIAS to enhance the public's understanding and acceptance of information protection through awareness, training, and education; partnerships with K-12 schools leverage existing connections to local community life and help to bring a seemingly remote and ignored topic from the classroom to the kitchen table. The two initiatives described below highlight work being done in this area.

A. Information Security Newsletter Series

The information security newsletter series is a collection of short, informative articles intended to be included with school newsletters. Written in an easy-to-understand, conversational tone, the information security newsletter series is an effective way to inform parents about the basics of information security.

B. PTO Presentation: Teaching Your Children to Use the Internet Safely and Responsibly

Internet usage continues to escalate, particularly among children. While this powerful tool offers many possibilities for growth and learning, it also presents many security threats to children and to their families.

This presentation familiarizes parents with information security issues and introduces the idea of creating a contract with their children to help manage their family's use of the Internet. This contract can help protect families against Internet dangers by helping parents communicate with their children about cyber-ethics, cyber-safety, and cyber-security issues. Creation of the contract can also reduce family conflict concerning Internet use by setting clear guidelines for use and establishing consequences for lack of observance of guidelines. Utilizing the defenses of prevention and collaboration, the Internet Use Contract can enable families to use the Internet safely and responsibly.

Delivered by CERIAS personnel experienced in information security issues and K-12 education, this presentation can be modified to fit any specified time frame from 30 minutes to 2 hours. In addition, this presentation is also available in the form of a self-instructional document.

Goal 2: Integration of Information Security into K-12 Standards and Curriculum

There is an alarming shortage of information security and information technology professionals in the state of Indiana and nationwide. At CERIAS, we believe that the solution to this problem begins early. Integrating information security topics into the K-12 curriculum and aligning it with state and national standards will help alleviate the shortage by increasing the skills of the entire future workforce. Integrating security topics into the curriculum will also help address issues of online safety, critical literacy, and transfer of ethical behavior to the online environment. Integrating information security topics into the curriculum promotes cross-curricular studies and real-world problem-solving.

A. K-12 Information Security Lesson Plans

We have developed a series of lesson plans to help teachers integrate information security concepts into their classrooms. Because we know that time is a critical resource for teachers, we have developed these lessons to be very easy to use. Aligned with Indiana academic standards, our lessons are complete with material lists, entry competencies, objectives, and step-by-step teaching instructions. Many of these materials can be easily modified to fit both younger and older audiences.

These lessons are cross-curricular and can be used to demonstrate the real-world applications of the various disciplines.

HOW TEACHERS CAN GET INVOLVED: We need you to share your expertise with us by trying out any of the lessons in your classroom and providing feedback. We are looking to continually improve the lessons so that we can best serve your students.

We are available to help facilitate the lessons with your students. In addition, we are available to conduct workshops with groups of teachers in which we deliver a presentation to provide the teachers with background knowledge about the lesson topic and then demonstrate and evaluate the lesson.

B. Middle School Information Security Materials

Two surveys concerned with information security literacy were given to almost 500 middle and 9th grade students in three schools in Indiana—two rural middle schools and one urban high school. The results of this survey led to the creation of lessons and activities geared toward the needs of middle school students. The lesson plans and materials, “Your Guide to Safe Surfing: Learning about the Internet” is aligned with state and national science, math, history, technology, and language arts standards.

Goal 3: Increase the Security of K-12 Information Systems

The security of cyberspace rests on the security of all its components. Even K-12 institutions contribute to or detract from our nation's cyber security. Unfortunately, few school systems have the in-house expertise or funding to mitigate risks to the security of their information systems. To ensure the security of a school's information, the availability of services critical to learning, and the safety of a school's constituents, CERIAS aims to take a multi-level approach to solving the information security dilemma.

A. CERIAS Workshops for the K-12 Technology Coordinator

Specifically geared toward K-12 technology coordinators, this series of workshops is designed to help ensure that the security risks to schools are known by all stakeholders and that they are made aware of the latest protection solutions to those risks. Workshops are conducted at the Wabash Valley Education Center (WVEC), with the intent to eventually replicate the workshops in other Indiana service centers in order to reach the entire K-12 community. Topics include:

1. Introduction to Information Security
2. Risk Analysis
3. Legal Issues and Regulations
4. Creating & Auditing School Security Practices
5. Building an Awareness and Training Program
6. Intrusion Detection: An Overview

B. School Vulnerability Assessments

InfoTex, an information technology consultancy and a sponsor of CERIAS, has provided five pro bono vulnerability assessments to a group of participating schools. The results of these assessments will serve several purposes:

1. Increase the security of participating schools’ information systems by providing a detailed report of existing vulnerabilities as well as future suggestions for network design and configuration.
2. Provide accurate, anonymized, scalable data on the state of information security in K-12 schools that can be used to support future educational initiatives.

C. Purdue University/Indiana K-12 Schools Joint Project

CERIAS is partnering with the Purdue University Schools of Technology and Education, the WVEC, and select K-12 schools to write a grant proposal to fund continued and expanded work in this area. The grant would establish a service-learning course wherein graduate students will teach technology coordinators more about information security in a one-on-one manner. The graduate students will receive course credit and the schools' technology coordinators will get ongoing, sustainable training on new security threats, vulnerabilities, and countermeasures.

D. Keeping Information Safe: Practices in K-12 Schools

This project, funded by the Indiana Higher Education Telecommunications System (IHETS), serves several populations: 1) in-service K-12 educators who hold a bachelor's degree or higher in education or a related field, 2) K-12 support staff who operate computers as end-users and/or handle sensitive and confidential information, and 3) Purdue University undergraduates enrolled in educational technology courses. The output of this project will be a set of self-instructional multimedia modules focusing on best-practices in end-user information security.