Electronic Educational Data Security: System Analysis & Teacher Training

Deborah Bennett
Department of Educational Studies
Purdue University
Indiana Assessment System of Educational Proficiencies

- 1997 Amendments to IDEA
- Access & Accountability for All
- Development of Alternate Assessments
  - Electronic Data Collection Systems
  - Integration of Multimedia Technology
  - Continuous Access for Better Decisions
  - Interpretable Information
Problems with Data Security

- First Attempt to use this type of system on a wide scale basis
- Parents concerned about confidentiality of information
- Legal issues with collection and storage of sensitive data
Collaboration with CERIAS

- Stakeholder group assembled to address concerns
  - Teachers
  - Parents
  - Administrators
  - Legal Consultants
  - CERIAS Staff
  - SOE Researchers
  - State Consultants
Confidentiality Reminders

- **Educational records are maintained by an educational agency and are directly related to a student.**

- **IASEP** is an educational record.

- **Personally identifiable information includes a student’s name, names of a student’s parent(s) and family member(s), and identifiers such as personal characteristics and social security number.**

- **Parents have the right to review all educational records until a student reaches the age of 18 years. At this time, the right transfers to the student.**

- **There must be parental consent to disclose educational records to a third party.**

- **Parents must be informed of their rights annually.**
Initial Investigation

Data Modeling Diagram

Threat Analysis

Security Architecture

System Policy

User Awareness
# SAMPLE THREATS

What can go wrong in the data flow process?  
(Miller, 1999)

## Threats because of physical security in the classroom.

<table>
<thead>
<tr>
<th>Threat</th>
<th>Prob. Occur</th>
<th>Conseq. Occur</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Laptop is stolen. Data are released. The asset is lost.</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>B. Shoulder surfing leads to compromise of system passwords.</td>
<td>Low</td>
<td>Medium</td>
</tr>
<tr>
<td>C. Password sharing leads to compromise of system passwords.</td>
<td>High</td>
<td>Medium</td>
</tr>
</tbody>
</table>

## Threats because of vulnerability in operation system.

<table>
<thead>
<tr>
<th>Threat</th>
<th>Prob. Occur</th>
<th>Conseq. Occur</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. A Windows vulnerability is discovered and service pack issued</td>
<td>Low</td>
<td>Low</td>
</tr>
<tr>
<td>B. Misconfiguration in system leads to unauthorized access</td>
<td>Medium</td>
<td>Medium</td>
</tr>
</tbody>
</table>

## Threats because of user error.

<table>
<thead>
<tr>
<th>Threat</th>
<th>Prob. Occur</th>
<th>Conseq. Occur</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Laptop or server crashes or programs are broken</td>
<td>High</td>
<td>Medium</td>
</tr>
<tr>
<td>B. Users change the laptop configuration</td>
<td>High</td>
<td>Medium</td>
</tr>
<tr>
<td>C. Laptop is used for unintended purposes and virus or trojan is introduced.</td>
<td>High</td>
<td>Low</td>
</tr>
</tbody>
</table>
Figure 2: IASEP Security Architecture
Teacher Training

- User Error the Greatest Threat to Security
- Teachers are Unaware of the Consequences of Practices
Teachers, Cont.

- Development of Training Video to Assist in the Reduction of User Error
- Development of a Comprehensive Data Security Protocol to Advise Educators on Security Issues