Effective Design of Educational Networks

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Designing and maintaining an effective computer network is a daunting task, but developing a network for an educational institution is an entire new beast in itself. However, as schools continue to educate the generation of digital natives, having an effective computer network plays an incredibly important role in the educational world. When given the task of designing a computer network for an educational institution, a designer must consider the following four things: What, Who, How, and Cost.

What?

A successful product is always designed with the purpose in mind at the forefront. The features of the product are developed to address the purpose. What is the purpose for creating this computer network? For an educational institution, the purpose may be to grant students and teachers access to the information available on the Internet, increase opportunities for communication, the storage and exchange of data, or all of the above. With all of these considerations in mind, a network administrator must identify the software options available to meet these needs, all the while considering the other three factors. For example, when a network administrator is designing the network to access the internet, the designer must also consider **who** will be accessing the internet.

Who?

The *who* may be the most important factor when developing a network for an educational institution, as it greatly impacts all other factors. Educational institutions serve children at a wide range of ages, and it can be difficult to ensure students are not accessing inappropriate material while using the school network. Yet the task of determining what is/isn't inappropriate is a difficult task in itself. Unfortunately, network administrators are required to address this issue if federal funding is to be received. Additionally, a network administrator needs to identify how

many users will be using the network, as well as how often. These items will help determine how to create the network in regards to size, speed, and accessibility. Another *who* to determine is who will be administering the network, offering support to users, and keeping the network relevant to the purpose.

How?

Once the purpose of the network has been identified, a designer must determine *how* to meet the purpose. While important, the decision of *PC or Mac*? is not the only decision network administrators need to make. Network administrators, in collaboration with school leaders, need to identify the best ways to continue moving the district into the digital world, all the while maintaining safety, security, and relevance. This means choosing the best software and hardware. However, network administration is much more than initial set-up. Equally important is maintaining and expanding the network capabilities. It is essential that technology leaders continuously evaluate the network's current status, identify areas of weakness, and work to improve them. There is no one-size-fits-all model, and with the expanding technology options and capabilities available, and the decreasing budgets to support them, it is important that schools are getting the most out of their funds, but also maintaining a current set of technology.

Network administrators also need to determine how the information stored and exchanged on the network will be protected. A school district stores sensitive information, and given the Family Educational Rights and Privacy Act (FERPA), it is essential that some type of network security is in place to avoid this information being disclosed. Firewalls and anti-virus software can help secure data, while still permitting users to access the Internet. Other federal guidelines, such as Children's Internet Protection Act, require that districts secure filters to block access to some inappropriate material available on the Internet.

Network administrators also need to be prepared in the event of a disaster. Backing up data, redundancy, and having up-to-date Board approved polices are some preventative best-practices. In addition to a Disaster Recovery Policy, districts should also have an Acceptable Use Policy in place which outlines the terms of use for the school network.

Cost?

Last, but not least, is the factor of cost. Running and maintaining a school network is costly. Costs include not only the hardware and software, but the salaries and benefits of the staff that administrate the network. Additionally, technology equipment goes out of date fairly rapidly and the cost of replacement can be expensive. While the federal E-Rate program issues some discounts for schools, they are held to the terms of CIPA in order to receive this funding, and e-rate funds do not cover all of the costs associated with running a computer network. Given the current state of the economy, several federal programs have been tremendously scaled back and technology administrators may someday have to face these costs without the support of federal dollars.

Computer networks in education must be designed with structure and flexibility. Network designers must be cognizant of their users and the federal laws that apply to them, but also find ways to enhance their education by provided the best technology available. Network administrators must provide guidelines through policies to be effective users of the network, but acknowledge that the educational practices, technology, and information available on the Internet changes daily. Therefore, while policies must be structured, they must also be designed to meet the changing needs of an educational facility. By continuously reflecting on the previous four factors, a computer network for an educational facility will remain effective, relevant, and continue to benefit the patrons it services.

References

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