EMERGING TECHNOLOGY TREND

Implementing a One-to-One Approach

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INTRODUCTION

Implementing a One-to-One initiative is an important step in establishing a 21st-century learning environment. A One-to-One approach emphasizes 24/7 access to technology through modern computing equipment and internet connectivity. This provides students with the tools they need to become technologically literate and competitive in the modern world.

In this brief whitepaper, NEOnet will examine implementing a One-to-One program, and discuss how school districts in Ohio can implement a One-to-One initiative seamlessly and benefit from its implementation.

PROJECT GOALS & BENCHMARKING

Implementing a One-to-One program has proven to increase standardized test scores in all subjects. The improved test scores are due to the vast amount of ready and available information provided to students through direct technology access. When students are equipped with the right technology and know-how to properly handle technology in the 21st-century, their productivity increases.

Benchmarking success goes beyond test scores. Teaching students the proper ways to handle technology in the 21st century benefits productivity in a society increasingly reliant upon technology. One meta study in particular from Youngstown State specifically found that the benefits of One-to-One go far beyond the realm of test scores and the most impactful factor is the students' ability to manage and use technology to be more productive. The study looked at Ohio schools specifically who are utilizing One-to-One making it the most applicable analysis of technology integration.

The goals of implementing a One-to-One initiative are to create a program that helps students with the following:

- Solve complex problems in real-time.
- Think creatively in both digital and analog environments.
- Think analytically and promote higher-order thinking skills.
- Collaborate in both virtual/physical spaces, with both virtual/physical partners.
- Communicate effectively in text, speech and multimedia formats.

The main goal is to provide students with the skills and technology they need to succeed in today's world – leveling the playing field and providing every student with a consistent basis for education.

CONNECTIVITY AND WIRELESS INFRASTRUCTURE

One-to-One initiatives require reliable, high-bandwidth enterprise class wireless networks. The following items are the foundation for successful implementation:

1. Fast and reliable network infrastructure – The network infrastructure and cabling needs to be designed to support the wireless access points and traffic. This includes having enough power over Ethernet capabilities to support newer AC standard APs. Without a solid physical infrastructure, wireless will fail to support the needs of One-to-One.

2. Wireless survey and physical cabling – A physical onsite wireless survey should be conducted so access points can be placed in the optimal positions to provide the best service reliability. The cabling that supports the APs should also be a minimum of Cat6 and allow the AP to be placed in a location that best suits its transmission capabilities. A properly conducted wireless survey will determine the exact location of each access point.

3. APs and client hardware – When choosing access points and clients, both should support the new AC standard.

Hardware Infrastructure – When choosing network infrastructure to support wireless, be sure to design the solution with these key items in mind:

1. 10G switches should be the backbone of the network.
2. When possible build the infrastructure to support redundancy.
3. High Speed OM3 fiber is best for 10G connectivity.
4. Know the POE requirements of your access points when choosing the switch.
5. Organize wiring closets efficiently with 1' cables.

Software Infrastructure (Active Directory Management) – Active Directory Management is key for tracking district property, managing content filtering and distributing software to client devices. Having this single point of authentication for all devices makes user account management easy and allows school districts to deploy solutions based on the user. Through Active Directory, Google can be synchronized and accounts can be provisioned so students only have one account to worry about.

How NEOnet can help? – NEOnet can be your one-stop provider for this entire process. We can help design and implement the hardware infrastructure upgrades, as well as deploy a managed wireless service that is guaranteed to support even the largest of One-to-One initiatives. Our expertise with Active Directory and account automation cannot only make the daily administration of user accounts easier, but we can also streamline the process and make it much simpler for students.

TIMELINE

All timeline suggestions are based upon observations and best practices from successful programs. The timeline laid out is merely a guideline to follow and can be altered to fit a specific district requirement.

The first step in implementing a One-to-One initiative is to ensure that building infrastructure can handle the load of increased wireless usage. Following the creation of an adequate wireless system, schools must train employees to use the technology properly through professional development. Professional development enables teachers to use the immense possibilities of the One-to-One program to its full potential. Although professional development is not required, it is highly recommended. Once teachers are able to integrate the technology effectively, the district needs to decide on final policies for students and parents prior to implementation of final hardware.

An agreement is necessary between students, parents and the school to clarify responsibility of the district's property. Once contracts are made for hardware implementation and distributed to students and parents, all paperwork is to be completed prior to hardware rollout. After the completion of paperwork and policy agreements, the devices are distributed to students.

Throughout the school year, the host district will handle and manage devices through their own preferred means.

NEOnet recommends workflows for device rollout and assignment and a Google Admin to handle cataloging and device management. Devices are then accounted for at the end of the school year according to the host district's equipment renewal and distribution cycle policies.

RISK

With all new programs, there is always some risk involved. Below are common risk factors to keep in mind when implemented a One-to-One program.

- Inadequate financial resources to support schools: Need for revenue will become apparent when school districts use the service to its fullest potential. The program will need financial support and the sustainability of the program hinges on the school's interest and participation in the program.
- Staff to support the schools.
- Stakeholders do not participate in the plan: Participation is vital in funding the program in the future.
- Technology is implemented, but not used to full potential limiting return on investment.
- Devices are abused by students hindering the ability to integrate technology.

RECOMMENDED STUDENT EQUIPMENT

Chromebooks are the most typically used devices for a One-to-One program. These notebooks are rugged, inexpensive and simple to administer and manage. Chromebooks even integrate touchscreens – reducing the reliance on tablets. Chromebooks can often be bought in bulk, directly from manufacturers and suppliers.

NEOnet works directly with distributors of Chromebook hardware. By making bulk quarterly and yearly orders for hardware, NEOnet can help districts save money on hardware and provide you with reliable, high-quality equipment. This also saves you time, as school employees no longer have to spend hours tracking down the right equipment.

Districts can take advantage of NEOnet's annual payment plan to assist in budgeting for a One-to-One program. The payment plan can be spread over multiple years.

MAINTENANCE AND UPDATES

Given the fast pace of technological advancement, most One-to-One devices will need to be replaced or updated regularly. There are several approaches to One-to-One device replacement and each school district is responsible for their own approach.

However, NEOnet's primary recommendation is a four-year replacement cycle. A four-year cycle means, after four years of a device being in use, it's replaced with a newer device. This provides the ideal balance between affordability and usability, and is very useful for schools which have four grade levels in each building – such as high schools.

There are different approaches that districts can take to handle device ownership between school years. Most school districts collect student devices at the end of the school year and redistribute them in the fall when students return. This helps streamline administration and can be helpful if there are multiple devices that require replacement. However, doing so also requires a lot of work – the district must collect, catalog, maintain and then redistribute devices.

Alternatively, students can keep devices throughout the summer. This increases the risk of device loss or damage but allows students who may not have access to technology to continue learning throughout the summer.

Districts that choose to allow students to keep the devices between school years should establish a plan to address lost or damaged equipment.

PROFESSIONAL DEVELOPMENT AND CURRICULUM

To effectively implement a One-to-One approach, staff and teachers must be properly equipped and trained.

NEOnet provides 300 professional development courses online to aid educators in Northeast Ohio as they adopt One-to-One methodologies. In addition, NEOnet has partnered with Summit ESC and Medina ESC to help provide an expanded curriculum for technological integration and educational development.

With a variety of certifications, development programs, and resources available, NEOnet is leading the charge when it comes to adoption of One-to-One education, and is a valuable resource for educators interested in this unique, modern approach to 21st-century learning.

COST CONSIDERATIONS

The costs of a One-to-One program are reasonable, but not limited simply to the price of the device that a student uses. Among cost considerations that must be taken into account are:

- Device theft/loss
- Infrastructure upgrades/maintenance
- Cost of upgraded internet service
- Device administration
- Cost of professional development programs

CONCLUSION

NEOnet Is An Ideal Partner For One-To-One Learning.

For today's students, a technological approach to education is no longer optional. To educate students for the future, school districts must focus on modern strategies such as implementing a One-to-One program to provide students with 24/7 computer access.

NEOnet can help in the procurement and setup of equipment and infrastructure, professional development and training and much more. We encourage you to learn how a One-to-One program can improve your students' learning abilities and change your school district – for the better.

If you would like to continue this discussion further, contact Executive Director Matthew Gdovin at gdovin@NEOnet.org or call 330-926-3900, ext. 601100.