

Oneida-Herkimer-Madison BOCES
EDU2011 Proposal WC Docket No. 10-222

Bridging the Digital Divide

Introduction

Through the EDU2011 Pilot Project, Oneida-Herkimer-Madison (OHM) BOCES seeks to expand and enhance their already successful initiatives in online and web-supported learning. OHM BOCES has offered web-based digital resources and fully articulated online curricula for years. The difficulty is that some students do not have access to this material outside of school. The current e-rate rules on pro-rating the reimbursement for off-premises use of wireless connectivity make it prohibitively expensive for schools to offer this alternative to students. This pilot would allow OHM BOCES to extend the resources currently only available in school or to those who have home broadband access to all students, thus bridging the digital divide.

Program Description

The goal of this project is to leverage the strengths of the technology and education partners to create ubiquitous access to quality curriculum content for use by teachers and students. Primary beneficiaries are the students whose learning is no longer confined to the classroom, teachers rejuvenated by a collegial approach to teaching and learning, and ultimately, parents who can monitor their children's progress and see the benefits of technologically enhanced learning and broadband access in their homes.

This project addresses the needs in our community to close the digital divide between those who see the benefits of and can afford technology for educational use and those who cannot afford it or do not understand the value technology brings to education. The dichotomy is evident on the individual level, where some students and families have broadband access and other do not. It is also evident in schools, where there are differences in the availability and usage of technology. While most schools in the area have computer labs and many also have laptop carts, none have made a large scale effort to use one-to-one computing. Through this project, both families and schools will have the opportunity to see the benefits of ubiquitous technology resources.

Attempts at improving education frequently focus on creation of quality materials and increased access to materials. Sometimes individual lessons created by a project are aggregated into a searchable database for use by teachers and students. This project goes several steps further, with curriculum development to frame the content, 24/7 access to materials by teachers and students, and use of a learning management system (LMS) platform designed to incorporate assessment and reporting. This LMS and associated curricula and resources can be used to provide fully online courses but is primarily used in hybrid classes, to supplement traditional instruction.

Program History and Technology used

The project began in 2007, when seven area teachers were selected to be part of a physics development team requested by area superintendents. During the course of the summer, teachers developed the course outline, scope and sequence, daily plans, and section details with standards, vocabulary, activities, laboratories and assessments that incorporated 21st learning standards. They then shared years of teaching experience through worksheets, laboratory plans, and presentations, hosting the results on an on-line learning platform from Agilix called Brainhoney. All materials are available to students, teachers, and parents on the Brainhoney LMS platform, for access anytime, anywhere. This package allows teachers to track each student's engagement, time on task, with real time formative and summative assessment. The course incorporates strong pedagogy, and rich media content, making use of OHM BOCES digital media streaming, virtual reference library, and other digital content. Students now become active partners in their own education, as the course is designed to give prompt and thorough feedback, to provide opportunities for active participation in discussions, and the ability to review content until mastery is achieved. Certified New York State teachers can review an analysis of assignments and assessments to assure that all standards are being addressed and mastered. They can see where students need to work, which students take advantage of the resources, and which need additional assistance. Teachers can adapt the course to the particular needs of their students or to their own teaching styles. Parents are encouraged to view student work in the system.

The key to success is a well designed curriculum. OHM BOCES has since started work on several new curriculums for on-line use. To supplement in areas where OHM BOCES has not yet created curriculum content, content from other providers such as Florida Virtual Schools is licensed and provided. The curriculum then is enhanced with digital content from OHM BOCES media and library systems, including the following:

- Streaming media – 50,00 titles, accessible by grade, subject, keyword or standards
- Streaming music – 5,000 titles of royalty free music
- Streaming television programming, including locally developed programs, available on premises only
- Library databases
- Virtual Reference Library
- E-Text books
- Teacher created materials

OHM BOCES is also working with E-Rate Central on their E-Bookroom Initiative, to leverage the power of quantity purchasing for e-books of all kinds. The K-12 e-Bookroom Initiative (“e-BI”) has been created to leverage the attention generated by EDU2011 to open meaningful dialogues with the textbook publishers with the aim of adopting standardized, school-friendly, licensing policies for K-12 e-textbooks. Success in this effort could be one of the more tangible achievements of the FCC's pilot program.

First attempts by OHM BOCES to use this unified curriculum and resources have met with both success and frustrations as described below.

Successes:

- Teachers have benefited from the collegiality and sharing of resources while knowing that they are contributing to best practices in the field. They appreciate the virtual file cabinet to keep resources at their fingertips no matter where they are.
- Students have benefited by having access to instructional resources, from flash simulations, to annotated and narrated presentations, to class notes, streaming media and discussions. They can easily review that presentation from class, ask a question of the teacher or other students in the discussion area, or retake a quiz until they are satisfied with the result. Students not only are more accountable, but are more responsible with this system.
- Parents appreciate being able to see details of student progress, rather than only the five or ten week grade with a comment attached. They can check on homework submissions, grades, even class participation by noting the amount of time spent on the system. Parents can communicate with the teacher using the system or by email.
- Administrators are interested in the benefits of the system in terms of the above mentioned benefits to their constituents. As usage grows, administrators will be tracking statistical analysis of usage and will relate that to student achievement and persistence.

Frustrations:

Lack of adequate access to the technology is the biggest stumbling block to success. There are still significant numbers of students whose families do not have broadband access at home, limiting their access to the instructional resources outside of the school day. Within the schools, teachers are frustrated by lack of access to computer labs or mobile carts to use for whole class instruction. These disparities are evidence of the digital divide that our project seeks to address.

FCC EDU2011 Pilot: Bridging the Digital Divide

To address the disparities described above, OHM BOCES proposes to offer netbooks with wireless broadband service to all component districts, based on district application. For this pilot proposal, OHM BOCES is seeking to serve the districts with a total of 360 netbooks, or an average of 36 per district for the 12 component districts in the BOCES. By asking the districts to apply to BOCES to participate, we can evaluate district readiness to participate, including their financial commitment, readiness for e-learning, appropriate policies and procedures, commitment to training and commitment to participating in the evaluation process. It should be noted that districts already file e-rate form 479 with the BOCES, providing necessary assurances for participation. The BOCES approval process will go one step further, identifying other elements deemed necessary for a successful pilot.

This project targets high school or middle school teachers and students and is designed to serve up to 360 students. The numbers of teachers who participate will depend on the school application. For example, a school may choose to enroll one teacher and one or more of that teacher's classes in the project. Other schools may select more than one teacher, to promote team teaching with the same group of students. Participating teachers have been or will be trained on the Brainhoney platform and use of the netbooks as described below.

Students who do not have broadband access at home will be provided netbooks with EV-DO wireless broadband access, and the *Brainhoney to Go* platform. They will use the netbooks both within school and outside of school. Students and parents will be trained in the use of the Brainhoney platform, so that students will have access to the OHM BOCES curriculum and digital resources, and parents will be able to monitor their children's progress. All netbooks will be configured with appropriate filtering and security systems as required for instructional use, including virtual private network (VPN) connection to the BOCES network.

Technical issues with implementation

As stated before, the major stumbling block to adoption of web-based learning is concern for those students who do not have broadband Internet access at home. Teachers are reluctant to require use of the platform or resources out of concern that it will cause undue hardship for students who only have access at school or the public library. By providing netbooks with EV-DO access, OHM BOCES and participating districts are addressing this issue. Furthermore, it is expected that a positive experience will encourage those who currently choose not to adopt broadband access to do so.

OHM BOCES is prepared to address issues related to availability of broadband access off-premises. First among those is assuring the safety of students using the Internet with these devices. OHM BOCES will set up a VPN link and configure all devices to "Call home" or connect to the Internet only through our secure network. That ensures that all Internet access will be filtered both on and off premises, through the BOCES filtering service. Devices will also be configured with enterprise level virus protection programs.

Other issues with off-premises use of equipment stem from poorly planned policies and procedures for the loan of equipment and training for care and use. Both are addressed below.

Training and procedures

Teacher training has already started and is ongoing. Teachers who wish to use the online platform are provided with a 30 hour training course on the platform, digital resources, and curriculum. This is supplemented with 10 hours of follow-up support meetings and an online forum. To date, over 40 teachers have received training on the Brainhoney platform and curricula. Teachers who participate in the Bridging the Digital Divide program will also receive training on use of the netbooks.

Student and parent training is also required for the Bridging the Digital Divide program. Coupled with policies and an agreement signed by parents and students, training assures that students and parents know how to use the equipment and the platform, how to access ancillary resources, and understand their rights and responsibilities.

Relation to local, state and federal initiatives

This project addresses the mission of the BOCES: *to coordinate the response of the community's emerging educational needs and to enable the component school districts to develop and accomplish their missions by providing innovative leadership and unique outcome-based instructional and management services through partnerships with business/industry, state, regional, educational and community-based organizations.*

School districts have requested and supported related curriculum development projects in the past. This project takes the results to the next level to support the next generation of teachers and learners. The New York State Board of Regents has initiated a task force to examine the role

of online learning in the state. The development and use of the first online curricula has already been recognized by New York State as a model. This project will serve as a pilot for the Regents task force as well as for the FCC, providing much needed field data on off-premises connectivity, online learning and one-to-one computing.

The project also addresses the National Broadband Plan, in particular, efforts to support “deployment of broadband and voice in high-cost areas and ensure that low-income Americans can afford broadband; and in addition, support efforts to boost adoption and utilization.” (FCC, 2010, retrieved from <http://www.broadband.gov/plan/executive-summary/>) By assisting students whose families cannot afford or cannot access broadband service, the project addresses access to learning resources. It also is likely to increase adoption and utilization as students and families who may be able to afford but do not currently have broadband access realize the potential and make it a priority.

Poverty Level: NSLP and other measures

Based on National School Lunch figures from October, 2010, the weighted average of students eligible for free or reduced lunch in the 12 component districts is 62%, but ranges from 20% to 77%. The E-rate reimbursement percentage for the region is 57% and it ranges from 40% to 90%. Actual numbers are subject to change by the time the e-rate 471 application is due, as districts create a concerted effort to reach families that fail to return the school lunch applications. The actual numbers on the 471 application will also be subject to the particular schools that participate in this pilot program.

The Oneida-Herkimer-Madison BOCES serves 24 school districts that provide educational services to approximately 38,000 K-12 students in Oneida and Herkimer Counties. This application is focused on our 12 primary component districts in Oneida County, serving 25,000 students. Most component school districts are below the state average for wealth as defined by New York State’s combined wealth ratio (CWR). The Combined Wealth Ratio (CWR) is a measure of relative wealth, indexing each district against the statewide average on a combination of two factors, property wealth per pupil and income wealth per pupil, with a CWR of 1 being the state average. In this region, district CWRs are under 0.75, with only one exception. Most are under 0.5, or half of the state average for wealth.

In the past 20 years, Utica (the sole urban district served by OHM BOCES) has been host to more than 10,000 refugees. This ranks the population of Utica as the fourth highest concentration of refugees in the United States and the City of Utica with a refugee population of nearly 15% from more than 26 countries, resulting in a large community of relative newcomers to technology. Either because of cultural differences or because of limited English proficiency, the refugee populations are less likely than Americans to return the school lunch program applications. That makes it difficult to ascertain the true degree of poverty in the area.

Budget

The budget for this project is projected, based on participation of districts up to the maximum of 360 units. All costs, both eligible and ineligible, are summarized in the chart below. As can be seen from the chart, there are sufficient resources to support this project. The costs listed are for the project and do not reflect other related resources such as our digital streaming media and library resources. Actual costs will be dependent upon the number of districts that add the netbook option to their existing online services program.

| BUDGET ITEM | qty | unit cost | Ext. Cost | TOTAL |
|--|-----|-----------|------------|--------------|
| Professional Salaries | | | | \$14,857.31 |
| Training (teachers, parents, students) | | | 7,000.00 | |
| Program Coordinator (.1 FTE) | | | 7,857.31 | |
| Non-Instructional Salaries | | | | 10,402.67 |
| technical support | | | 7,819.94 | |
| clerk | | | 2,582.73 | |
| Equipment | | | | 7,182.00 |
| netbooks | 360 | 19.95 | 7,182.00 | |
| Supplies | | | | 28,000.00 |
| netbook accessories/software | 360 | 75.00 | 27,000.00 | |
| instructional materials | | | 1,000.00 | |
| Contractual Undefined | | | | 189,745.00 |
| web platform | | | 10,350.00 | |
| Curriculum content | | | 6,595.00 | |
| broadband access | 360 | 480.00 | 172,800.00 | |
| Employee Benefits | | | | 25143.90 |
| Total Expenses | | | | \$275,330.88 |
| Eligible Expenses (Broadband access) | | | | \$172,800.00 |

Effect of support for off-premise connectivity

This proof-of-concept project is expected to do what its title suggests; that is, to *bridge the digital divide*. For too long, attempts at making instruction and educational resources available to students outside of the school premises or school day have met with resistance. The resistance comes from those well-meaning educators who are concerned about the digital divide and its effect on students who have no broadband connectivity at home to allow them to access the materials. Reasons why students in this region do not have broadband access at home vary, either because of the rural location of their homes, lack of funding, or lack of understanding of the value. Among schools, too there is a digital divide, with some schools having more availability of computers than others. Most schools are limited in providing sufficient access to computers and the Internet, because of lack of space for labs or funds for the computers themselves. Efforts to provide anytime, anywhere access to educational resources are often stymied by this lack of access.

This program aims to bridge that digital divide by making broadband access available to those who need it. For some, computers and Internet access is considered a luxury. They either

do not have the funds or do not choose to use them for this purpose. There was a time when the telephone and television were considered luxuries, yet now those technologies are routinely found in homes, even the very poor. What has made the difference there? The technologies have become accepted and their utility for the family is unquestioned. We hope to show those who may be reluctant to adopt internet connectivity that there is true value in it. By allowing them to borrow the netbooks with access, we provide the opportunity to test-drive the technology.

Some students do not have access because their rural location is outside of the mainstream broadband providers, such as cable or DSL. For those students, satellite internet access is a costly alternative because of the equipment costs. Wireless broadband access may be a solution but families may not know that this option exists, or be unwilling to agree to a two-year contract for something that they do not know will work for them. Again, this project allows them to try out the technology in a safe, controlled environment, with appropriate support.

Although we do have the technology and the ability to provide wireless access currently, and it is used on a limited basis for administrators, the requirement to pro-rate the access charges for on-premises use only makes it prohibitively expensive for widespread use in schools. It is the consideration for full e-rate support that makes this project feasible.

Analysis of cost effectiveness

This approach to broadband connectivity in the central New York region is the only reasonable approach. While some students could be served by more traditional forms of broadband access, the fact that they do not currently have it may be related to issues of adoption mentioned above. For those without cable or DSL available, wireless broadband is a reasonable alternative without the additional equipment costs of the only alternative, satellite. The portability of the netbooks with EV-DO wireless broadband make them the best alternative for allowing students and families to access educational materials at home and learn about the benefits of broadband for educational use. As students no longer need the netbooks, they can be shifted to other students who do.

Another approach to this project may be considered with new tablets, smartphones, or PDA devices. There is no advantage, and there may be a disadvantage in terms of equipment costs to using these alternative devices. Furthermore, the alternatives do not necessarily support the digital format of the educational resources, such as flash animation or the ability to use the utilities such as Microsoft Office required in the courses. Netbooks are good, low-cost all purpose devices to use.

Technology planning

Bridging the Digital Divide involves not only OHM BOCES as the provider of services and training, but also the individual school districts served by the program. The OHM BOCES draft technology plan for 2011 – 2014 is attached as a separate file, but it should be noted that it is a work in progress. The provision of wireless broadband services using smartphones and netbooks is included in the BOCES telephone interconnect service. Each district that participates will be required to have a technology plan that addresses the program and the local resources applied to it.

Long-term objectives for the program are to have this service available to schools on an as-needed basis. Schools have already demonstrated support for the online services, and have asked for assistance in providing broadband access to students in need. In the shorter term, this

pilot project will allow BOCES, New York State, and the FCC to evaluate the provision of equipment and broadband services to students off-premises and identify unforeseen issues.

CIPA compliance measures

OHM BOCES and component districts already comply with CIPA and NCIPA by contracting with the Mohawk Regional Information Center (MORIC) for Internet access and filtering. Filtering takes place at the MORIC server level and all devices with Internet access are required to pass through this filter. For the netbooks, a VPN ensures that the devices go through the OHM and MORIC network to access the Internet, thus assuring CIPA/NCIPA compliance off-premises.

Acceptable Use Policies

OHM BOCES has a number of policies that relate to this project. First is the Access to networked information resources policy, found at:

<http://www.moboces.org/policies/oneidaboces/7250%20Access%20to%20Networked%20Information%20Resources.pdf>. This policy is relevant because all of the Internet traffic will flow through the OHM BOCES network.

The Instructional technology policy can be found at:

<http://www.moboces.org/policies/oneidaboces/7160%20Instructional%20Technology.pdf>. This policy deals with staff development, technology integration, and most importantly, “The equitable distribution and access to technological equipment and materials for all students.”

The Internet Safety Policy addresses issues related to CIPA and NCIPA and is most important to this project. It can be found at:

<http://www.moboces.org/policies/oneidaboces/7253%20Internet%20Safety%20Policy.pdf>

In addition, each district that participates in the pilot will be required to have acceptable use and internet safety policies. The e-rate form 479 process assures that the districts do have these in place, but we will also ask them to review related procedures to assure that they are appropriate to this particular project. OHM BOCES will work with districts to adapt existing equipment loan procedures to fit the parameters of this project.

Additional Required Information:

1. Location of school:

The applicant is Oneida-Herkimer-Madison BOCES, on behalf of the consortium of schools it serves in Oneida Herkimer and Madison Counties, NY.

2. Name of the applicant, list of schools and their Billed Entity Numbers:

Applicant: Oneida-Herkimer-Madison BOCES, BEN: 232726

Contact: Kenneth Ford, Director of Information and Technology, kford@oneida-boces.org; 315-793-8502

All billing will be through OHM BOCES

Schools served (actual schools to be chosen by application; Utica City Schools and Holland Patent schools have already applied). School entity number from E-rate form 471:

| | |
|---|--------|
| Brookfield Central School | 14610 |
| Clinton High School | 14624 |
| Clinton Middle School | 14623 |
| Holland Patent High School | 14647 |
| Holland Patent Middle School | 14649 |
| New Hartford High School | 14675 |
| Perry Junior High School (New Hartford) | 14678 |
| New York Mills Jr/Sr High School | 14862 |
| Oriskany Jr/Sr High School | 14692 |
| Remsen Jr/Sr High School | 14698 |
| Sauquoit Valley High School | 14722 |
| Sauquoit Valley Middle School | 14720 |
| Proctor High School (Utica) | 14753 |
| Donovan Middle School (Utica) | 14767 |
| John F. Kennedy Middle School (Utica) | 14759 |
| Waterville Jr/Sr High School | 14736 |
| Westmoreland High School | 14740 |
| Westmoreland Middle School | 190773 |
| Whitesboro High School | 14663 |
| Whitesboro Middle School | 14746 |

3. Description of the school district

Boards of Cooperative Educational Services (BOCES) were created in 1948 by the NYS Legislature to support public school districts by providing educational and management services more economically than each district could when operating independently. Through this consortium, The Oneida-Herkimer-Madison BOCES serves 24 school districts that provide educational services to approximately 38,000 K-12 students in Oneida and Herkimer Counties, Central New York state. This proposal is designed to serve middle and high schools in the 12 primary component school districts in Oneida county.

4. Description of curricular objectives, grade levels, and numbers of students and teachers:

Bridging the digital divide is aimed at middle and high school students and teachers. This pilot program is designed to serve up to 360 students and their teachers. The actual number of students and teachers will depend upon district participation, but we already have a commitment for 2 teachers and 36 students in two districts. Curricular areas will include but not be limited to physics and living environment. The objectives are:

- to increase student involvement, accountability, and by extension, achievement, in courses that are a part of the pilot program,
- to increase teacher/student/family communication, and

- to increase awareness of the importance and viability of ubiquitous access to online educational resources.

5. Summary of data collected by the school on program outcomes and achievement of objectives.

In the past two years, over 40 teachers have been trained in the use of the online learning management system Brainhoney. Over 2800 teachers have been trained in the use of additional online resources such as our digital media, library databases, and virtual reference library. Teachers who use the Brainhoney system report that students are more accountable for their own learning, taking advantage of the resources to improve test scores and quality of their work. There is no data yet on use of netbooks with broadband connectivity to support this project. It is expected that the benefits seen thus far will be extended to a wider audience through this project.