



**Opportunities for Educational
Technology
In
Blackduck, Minnesota**

Review by Curt Madison, PhD
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For the Bruce E. Clubb Family Trust

Overview/Recommendations

Blackduck Public Schools enjoy a long history of involvement with their community. The school is a social space for entertainment, sports, and now also a source of student built housing. Over more than a century the city of Blackduck has had a steady population around 700. Ironically the Blackduck Public School in itself also now has a similar number of attending students by attracting students in the area who live outside the city limits. The school population boasts a significant diversity of ethnic groups, races, country of origin, and level of academic preparation. This diversity built on the foundation of a consistent community is a vital source of increasing strength.

The school was organized in 1901 after one room log cabins were no longer sufficient to provide for elementary schooling. By 1902 there were 116 students in a two story wooden building. In 1909 the first brick school house was completed. Additions happened in 1938, 1953, 1957, 1968, and finally to its present footprint in 1994. The building has served the Blackduck area well, but as you can imagine there are many issues juggling the routing of utilities through the various building styles.

The dedicated faculty and staff of BPS have created an atmosphere of respect for learning and high levels of academic skills. Seventy percent of Blackduck High School graduates attend post-secondary education.

Blackduck has significant expertise with special education students and a well-deserved reputation among regional school districts.

Effective institutions utilize regular strategic planning in the areas of fiscal stability, capital campaigns, infrastructure migration and cooperative partnerships. The planning process at Blackduck Public Schools is aligned with the new administrative direction.

Preliminary Recommendations

These suggestions are based on only a few weeks of considering the context of Blackduck Schools and a brief two day visit. There will be many reasons that some of the recommendations are more feasible than others. Some items are foundational to greater efforts while other items can stand on their own. Please consider this report to be preliminary in nature. Existing resources were not always evident to the reviewer.

- Wireless installation

The Blackduck School has significant Cat-5 cabling in place joining each classroom with central resources and the Internet. However, the hardwire infrastructure is limiting for many educational uses that place smart devices in the hands of mobile users. A wireless environment encourages learning to occur outside a classroom and among students. Two recent projects in Pequot Lakes and Cass Lake schools installed wireless access for \$127,000 and \$100,000 respectively.

- Electronic information handling

Historically school records for students were kept on typewritten cards or handwritten forms. This manner of record keeping is susceptible to loss from misplacement or natural degradation. An electronic record keeping process prevents loss and allows aggregation of information for analysis across individuals. Data mining approaches seek to find out what sequence of courses, activities, or behaviors lead to success for which kinds of students in nuanced ways. The migration to new information handling is not an easy task. As useful as an immediate migration might be, now is only the time for laying the groundwork.

- Website development and hosting

Blackduck Public Schools has a website at <http://blackduck.k12.mn.us/>. The site is hosted locally and is in the process of becoming a student project. The recommendation is to foster student development of the website with ongoing training, increased interactive options, and hosting off-site to increase the access speed.

- Teaching and learning communication support within existing classes

The reviewer was able to observe several classes at various levels from elementary to high school. The teachers clearly had a firm grasp of their content and their teaching. Blackduck is fortunate to have a cadre of experienced teachers who clearly respect their students and the community. The classes that were observed made good use of electronic technology within the capabilities of the existing infrastructure. Naturally, the tools supported teacher presentations utilizing increasingly interesting media. The next step is to find electronic tools to support student presentations or class discussions with multi-channel communication. A wireless environment could help a lot. In addition, pedagogical approaches may find ways to incorporate student cell phones and other user-owned devices.

- Integration of asynchronous course design for extended student contact

Blackduck has instituted a four-day school week. The result is slightly longer class times and normal three day weekends. The longer classes are helpful and the three day weekends make learning more customized, personal, and flexible. All the advantages gained by the four-day week can be augmented with a robust course design that encourages student self-paced work. No doubt many of the classes already have resources posted online for students unable to attend class due to sports, illness, or weather. The asynchronous capability can be expanded to encourage problem based authentic learning situations in the Blackduck environs.

- Strengthen the remedial reading efforts with Read 180 and System 44

Blackduck has made investments in the Read 180 program with a 12 seat license. The software linked to an active classroom rotation is proving very worthwhile. The teaching faculty and administration both commented that even further gains could be made by using the Read 180 methods at earlier grades and with more students. The school would gain by increasing the number of seats for Read 180. In addition, the prior preparation level of younger students is likely to be amenable to the System 44 software. The review recommends obtaining 10 seats of System 44 to bolster the work done in Read 180.

- Investigate migration of VoIP telephony

Blackduck uses analog phones in the school. In most cases the features of an analog system cannot match the myriad opportunities in a Voice over Internet Protocol (VoIP) environment.

Not only are there significant increases in productivity and collaboration when phone conferencing and voice mail elements are available, but there are significant cost savings by dropping analog lines.

- Make extensive use of Open Education Resources

Over the past fifteen years or so many educators around the world have experimented with creating Open Education Resources (OER). The repositories of OER hold anything from lesson plans to simulations to videos, sound, and data files. Notable efforts include the MERLOT repository, the Open Courseware Consortium started by MIT, and the proliferating Massive Open Online Courses (MOOC). All the resources are free to use.

- Seek advanced educational opportunities in college level courses and global student collaborations

The faculty and administration of Blackduck have a solid commitment to prepare students for success in the post-school world. They sincerely desire to be the springboard for every student into the complex life of the 21st century no matter where they live their lives. There is a strong concern to bring all students to a satisfactory level of reading, writing, and math. And, it is working.

In addition to closely watching the threshold of skill levels, the school may soon find that it can provide for the gifted students at the same time. The area of Advanced Placement and Dual Credit courses to preload students with college credit before they graduate is helpful. As the school becomes even more adept at low cost Internet based technologies, new opportunities to forge peer-level student collaborations across national boundaries and languages will appear.

Relation of Blackduck High School to local and regional efforts

- Bemidji Regional Inter-district Council (BRIC) has provided professional networking and joint purchase of some technology.
- A handful of entities recently pooled their funding to hire a full-time community developer, Brian Grow. He is housed in the Blackduck Public School and tasked with coordination of joint projects and grant writing.
- A majority of the school board recently attended State Board Training.
- Blackduck High School recently started an effort in the area of robotics. They took 15th place in a statewide competition..
- Blackduck High School is a debate powerhouse in the Regional competitions with many students competing at high levels.
- Blackduck sports teams have a long history of success on the playing field from early days of wrestling to baseball and the legendary 1949 football team featuring Hansen and Clubb as co-captains.

Articulated Strategic Goals

Administration, staff, and faculty have articulated key goals for the near future. Efforts are underway in the following areas:

- Fix reading, writing, and math skill levels in elementary grades to open up chances for enrichment in the high school.
- Create a capital plan to guide community fundraising with bond issues and requests to state and federal authorities.
- Increase stability of the building trades program by purchasing the lot across the street from the school. The program has built and sold a complete house each year for eight straight years.
- Pass a bonding resolution that will create lower property taxes in the next year while supporting the school.
- Restore professional development opportunities for the faculty and staff by creating a line item in the budget equal to 2% of the total budget.
- Lower class size to 17-18 students from the current average of 27 per room.

Existing Infrastructure

The reviewer was able to tour Blackduck Public Schools in the company of Superintendent Schoeb, Principal Hansen, and IT staff Norrgard. Several items stood out regarding the current infrastructure during the brief conversations that might be useful for future planning and involvement of the Clubb Trust.

- Internet connectivity is accomplished with a fiber optic cable to the building.
- Northwest Links handles a contract with Northwest Minnesota Special Access Network of bandwidth infrastructure users through 702 Communication, a local exchange carrier in Moorhead, Minnesota
- Incoming service was increased from 20 Mbps to 40 Mbps for the fiscal year 2013 at the same cost as the previous year. The school needs to keep considering the need to increase the bandwidth given that the fiber cable can offer significantly higher speeds than are now provided.
- 40 Mbps service for 2012-2013 is deeply discounted by E-Rate federal funding. Blackduck Public Schools pays \$859.63 per month, representing 20% of the actual monthly cost of \$4,298.13. During the 2011-2012 school year, Blackduck Public Schools paid the same monthly cost for exactly one half the amount of service. In addition, Blackduck Public Schools pays \$1,700/year to NW-Links for membership in the consortium.
- A local server is used for Public School website. Traffic to the server must run over the slow speeds of the available service. There are inexpensive hosting sites that could significantly increase the usability of the website.

- The configuration of the school requires multiple wiring closets. A thorough IT review might reveal networking advantages of different layouts if a wireless environment is built.
- Blackduck has multiple computer labs with dedicated uses. Many schools are disassembling their dedicated computer labs and finding a greater reliance on user-owned devices. It is possible that some burden can be shifted to non-school devices, although it is not a simple process to make the shift.
- There is extensive use of analog phone lines to all classrooms resulting in parallel systems for computers and phones of Cat-5 and Cat-3 wiring. Any new build out might want to consider integrating the systems.
- The multi-year construction of the school building has forced wiring to be carried in hallway closed trays as a wiring chase. A wireless environment might relieve constrictions that prevent easy expansion of the network to items such as additional surveillance cameras and other safety considerations.
- Blackduck makes routine use of School Reach software to enable automatic calls to cell phones, homes, and business. The system is used for such things as bus schedule disruptions or school schedule changes.

Existing Training

Professional development was curtailed in the past couple of years for budgetary reasons. Numerous staff and faculty lament the loss of opportunity to network with their peers in Minnesota and to experience first-hand the features of educational technology.

Proposed Infrastructure

- Increase the Internet connectivity at the rate of at least 40 Mbps per year to allow a steady increase in use of Internet resources in classrooms.
- Begin now to plan for a wireless network build out. Blackduck will need some core equipment and then numerous access points to serve the three levels of elementary, middle school, and high school. It is possible to build a phased project.
- Begin using iPads or other tablet devices to bring authentic learning alive among students. These devices are normally associated with student direct use and mobile instructional designs.
- Any lesson design applications should take into account the possibility of users bringing their own devices. IT support staff will need to take the requisite precautions to safeguard the school network while still taking advantage of student-owned devices.

- Install SMART Boards or Mimeo devices in all classrooms as presentation technology. Seek to incorporate cameras into the system to allow IP based video conferencing on demand.
- Purchase 10 seats of System 44 technology for use in the early elementary grades. Purchase an additional 12 seats of Read 180 technology for graduate inclusion of mainstream students along with the current remedial or special education uses.
- Recover some lost access to educational software from Bemidji Regional Inter-District Council (BRIC).

Proposed Training

- School administration seeks to implement Minnesota mandated 2% of budget funding for professional development. This effort should be enthusiastically supported.

Additional notes and links to resources

- State of Minnesota educational technology planning http://informns.k12.mn.us/Technology_Planning.html
- Technology Planning Assistance http://informns.k12.mn.us/TIES_L_T_Consulting.html
- 702 Communications <http://www.702com.com/business.php>
- Blackduck Public Schools <http://blackduck.k12.mn.us/>
- Edutopia-Project Based Learning <http://www.edutopia.org/blog/thinking-through-project-based-learning-suzie-boss>
- Edutopia best practices <http://www.edutopia.org/>
- Minnesota listing of educational technology organizations http://informns.k12.mn.us/Educational_Technology.html
- Northwest Links <http://www.region1.k12.mn.us/nwlinks/Home.aspx>
- SMART Boards <http://smarttech.com/Home+Page/Solutions/K-12>
- Blackduck may have funding opportunities linked to the enforcement of state and federal contribution levels in existing law.
- Blackduck has a long history of enthusiastic graduates who may be interested in combining forces for alumni philanthropy.
- The new Blackduck community developer is an excellent demonstration of aggregating multiple funding sources to support a full time position. Brian Grow could become an astute grant writer to strengthen the public school position in Blackduck area affairs.

Review development schedule

March 16 - Beginning discussion of needs analysis with Clubb Trust, email with Cynthia Nord

March 20 – invitation to Curt Madison to visit the Blackduck schools to gather information for possible funding by the Clubb Trust.

March 21 – Read 180 and System 44 identified as priority items for funding.

April 7 – Curt Madison arrives to begin visit with Randy Hansen

April 8 – Meetings and tour of the Blackduck Public School with Superintendent Wallace Schoeb, IT staff Bruce Norrgard, and High School Principal Randy Hansen

April 9 - Observed classes taught by Mr. Nissan, Ms. Sandvig, Ms. Page and her student, Savannah, Ms. Halupozuk