

# **Is the need for technology maintenance and support overlooked in the education setting?**

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## **Rationale**

Technology is a part of everyday operations for schools. Today, software (email, word processing, presentation tools, apps, student information systems and web browsers), hardware (desktops, laptops, iPads, smart boards, copy machines, and scanners), and the internet (wired and Wi-Fi) are foundational elements for the work that is happening in the classroom. Are school technology support models keeping up with the fast-paced evolution of technology expectations for the classroom? My research undertakes a study of the school technology “state of health” at one school to determine if the expectation for teacher usage and investment in equipment is matched with the requisite support level. Surveys and data collection support analysis of the impact on teachers, classroom instruction, and the investment in equipment when the school technology support is overlooked.

## **Review of Literature**

Schachter (2012) discusses the challenges of technology support in the public school setting. Along with a discussion of innovative ways to support technology in the school setting, it is acknowledged that while technology equipment purchases may be well-funded, technology support in public schools is often underfunded.

Hughes (2014) reports on a survey of school technology leaders. The large-scale survey had 600 respondents and districts from 45 states were represented. Among, half of the districts participating in the survey reported that acquisition of new technological equipment continues even though school technology budgets do not accommodate support for the existing equipment.

## **Background**

My non-Title I elementary school had 600+ students, 29 general education teachers and 3 special education teachers and 3 gifted education teachers, administration staff consisting of a principal, assistant principal, school secretary and clerk. Full-time support staff included a nurse and librarian and educational assistants. Part-Time staff included a Speech and Language Therapist, Occupational Therapist, Adaptive PE Teacher, and Social Worker, in addition to custodial and cafeteria staff. Every person and role group in the school has a unique dependency on computer equipment to conduct the responsibilities of his or her job.

Technology available in the school was comprised of two computer labs with PCs with Windows 7, Promethean interactive boards in every classroom, and a mix of 1 desktop and 1 laptop (either PC or MAC) of various ages and 1-3 iPads of various ages in every classroom.

The elementary school curriculum, attendance recording mechanism, and student information system were all web-based. The school/district has no identified technology curriculum or learning standards and the school does not have a technology education teacher for focused student instruction toward technology learning objectives.

Access to the internet was available through hard-wired ports in classrooms and intermittent wi-fi throughout the school.

All of the technology and role groups identified above were supported by one educational assistant with no skill or certification in technology support, working full time for an annual salary of ~\$14,000, in the role of Tech EA for three years. Job expectations for this role were to support regular ed teachers use of the computer lab during their once weekly lab time (with a different class rotating every hour, every day of the school week) and support the hardware and software in the school, including incoming technology refresh purchases and computer-based testing. Teachers’ technology support requests were initiated orally, by informal note, email, or using a binder located in the main office and no formal tracking mechanism was in place.

Concurrent with the environment above was the use of a state-wide teacher evaluation instrument that requires administration evaluation of a teacher’s use of technology for instruction. This evaluation instrument requires teachers two classroom observations a year for each teacher as part of the evaluation and student test-performance

on computer-based assessments for a large percentage (previously 50%, changed mid-year this year to 35%) of the overall rating for the teacher.

## **Study Design**

When dated and unmaintained equipment was introducing conflicts with imperative web-based programs required for teachers' daily use by the district, it became clear that our technology support approach did not match the current environmental demands. I asked the principal if I could conduct a "Technology State of Health" survey to be able to quantify the amount, type, and condition of the equipment in our school. I designed a survey to assess the working status/open issues of the 1) Teacher's Primary Computer, 2) Student Computers in the Classroom, 3) Other Classroom Devices (Promethean Board, document cameras, projectors, DVD players, etc), and 4) Environmental Support (internet access, Wi-Fi, printing, and computer lab conditions).

Teachers were asked to prioritize the impact of issues with their technology using the following scale:

**High priority** – impaired ability to function daily due to this issue

**Medium priority** – needs to be addressed, but can still perform daily tech functions

**Low priority** – can function without, but would like to have addressed

The survey was distributed by email. All teachers were required to participate by the principal. All individual response data from surveys was collected in a spreadsheet. This data was further summarized and analyzed to be able to quantify the state of our technological equipment and technology support model. The technology support EA was also surveyed to provide input regarding the support-role perspective and conditions within the school setting that might not otherwise be identified. Administration and other school support staff were also surveyed, with the exception of cafeteria and custodial.

## **Data and the Analysis of the Data**

The focus of the study was technology in the learning environment. Forty-one (41) surveys were completed and over 400 multi-platform devices were identified, including 60 lab computers. Platforms included various years and models of PCs, MAC laptops, iPads and Promethean Boards each with its own hardware/software maintenance complexity

One hundred and fifty-nine (159) issues were identified. Of these issues, 53% were identified as High Priority and causing an impaired ability to function daily because of this issue. Of the remaining issues, 24% were identified as Medium Priority – needs to be addressed, but can still function, 8% were Low Priority – can function without, but would like to have addressed, and 16% did not specify a priority.

Some issues would a few minutes to resolve and others would take hours. For an estimation of work-load a simple metric was used of 1-hour of support work to solve an issue. Using this metric, it was estimated that to complete the work of resolving the issues identified, it would 159 hours of work. This equated to 4.9 weeks of tech support work time, non-stop (based upon a 32.5 hour work week). To address the High Priority issues alone (84) it would be 2.6 weeks of work time, non-stop.

Additional issues were identified such as tech workload related to setting up student IDs, supporting teachers and student during lab time, maintaining 60 lab computers, opportunity to work on lab computers restricted and mainly had to take place after hours and on weekends (unpaid time for the EA), equipment inventory tracking issues, and extended preparation of computers for annual computer-based standardized testing.

Individuals in the Administrative office, including the principal and vice principal, had a simpler technology set-up and newer equipment, and no issues were identified for the survey.

## **Findings**

The primary finding of the study was that the support model for the technology in our school (dating back at least a decade) was inadequate to current demand in the school and classroom setting. When presented with quantifiable

data, the school instructional council (which includes PTA representation) reprioritized the work of the tech support EA. This was still inadequate to the task due to primarily hardware and software skill limitations followed by challenges with time and issue management/tracking.

Teachers are plagued by problems with technology when completing every day administrative tasks and when providing instruction to students. Students ability to use technology for learning is impaired in the classroom and in the computer lab.

Using this data as a basis, the following was communicated to the district school board:

Teachers are evaluated on their use of technology during their observed lessons for evaluation. Due to the low level of tech support in schools, many teachers are without working technology. This is creating stress for teachers when preparing lesson plans for observations to meet this competency. For teachers, much time is lost due to dealing with restarting, fixing, and finding work-arounds for non-working technology. This adds to stress and silently contributes to teacher work-load, as does meeting the technology-based evidentiary components of the teacher evaluation system (photographing, scanning, and uploading artifacts) Similarly, non-working technology and the breakdown of the technology infrastructure (loss of Wi-Fi, failure of the network for wired internet connections, etc) is disruptive to planning, quality of instruction, and student learning on a day-to-day basis. This is especially impactful with the largely internet-based elementary math curriculum, the math curriculum for Special Ed students, and efforts to prepare students for computer-based testing.

### **Subsequent Analysis and Findings**

Through the process of this analysis, a related issue of lack of understanding of the school's hardware inventory was identified. A subsequent study was completed to locate equipment by district tag number. Through this study it was identified that the school had no formal tracking mechanism for assigning and turning-in equipment for people leaving the school or changing classrooms. Using a spreadsheet from the district Capital Assets system, it was identified that the school had 881 pieces of equipment over \$500 in value that we needed to locate. Of this list, 82 were identified as having been salvaged in the current or prior years. One-hundred and fifteen pieces (115) of equipment were not located, including 55 desktops and laptops, 21 Macbooks, and 19 iPads, amounting to over \$57,500 in lost equipment. Further, another 30 iPads were found to have been sitting in a closet with an iPad cart. This iPad cart cost over \$25,000 and had been unused for over a year – the first of a 3-year warranty.

Further analysis of the district yielded information that of the 139 schools (elementary, middle, and high), 15 have similar technology support of consisting of a full or part-time Educational Assistant, 58 have a full or part-time certified tech support person on site, and 65 have a Technology Teacher on staff (who are responsible for technology instruction, not maintenance).

Data from the study showed that technology equipment supply was abundant in the school, though both the disposition of the asset and its working condition may be questionable. School financial documents indicate that the district recognizes the need for technology-specific equipment spending and utilizes Technology Equipment Notes to assess the local tax base to finance technology equipment acquisition. The money from these bonds is used for both district and school-based technology infrastructure and financing of equipment purchases for each school. Over the past 6 years, the district has issued \$48.6 million of these bonds for technology purchases. As was identified through this study, the district support model for maintenance, tracking, and utilization of the equipment purchased has not been aligned to the level of acquisition.

#### Albuquerque Public Schools - General Obligation Education Technology Notes:

Series 2011	\$18,600,000
Series 2014	\$15,000,000
Series 2017	\$15,000,000

### **Recommendations**

The union must recognize the role technology plays in the workplace and advocate strongly on behalf of teachers with the district. Current working conditions and educational expectations have placed significant demands on schools and teachers seemingly without regard to the reality that education IT support models are years to decades

behind when compared to the complexity of today's technology and teacher evaluation/classroom expectations. Weaknesses in the district's school-based IT support model will be borne by teachers through lower teacher evaluation scores and student test results (impacts in this area could range from environmental failure to lack of preparation for computer-based testing due to lack of working equipment). Thus, it is evident that teachers must be protected by contract language.

With appreciation to AFT Local #6 – Washington Teachers' Union, the following is an example of possible contract language introduced ten years ago in the "2007 Collective Bargaining Agreement" between the Washington Teachers' Union and the District of Columbia Public Schools that could be used as a model:

#### 25.6 Special Provisions for Instructional Technology

- 25.6.1 The Chancellor and the President of the WTU agree to work cooperatively to ensure that each Teacher has, for instructional purposes, a designated computer (preferably a laptop) as well as Internet access, as soon as possible after this Agreement takes effect.
- 25.6.2 When a Teacher transfers from one work location to another, DCPS shall provide the Teacher with an operational computer at the new worksite within thirty (30) calendar days.
- 25.6.3 In addition, the Parties agree to work cooperatively to develop an Instructional Technology Plan for DCPS that shall include strategies to:
  - 25.6.3.1 Acquire a sufficient number of computers for student use;
  - 25.6.3.2 Acquire other instructional technologies such as LCD projectors, interactive whiteboards, electronic student response systems, opaque document projects, etc.;
  - 25.6.3.3 Improve the availability, reliability, and speed of Internet access in all Schools;
  - 25.6.3.4 Train Teachers in the use of instructional technology; and
  - 25.6.3.5 Ensure regular maintenance of all instructional technology.

#### **Conclusion**

As evidenced in the research above, the importance of having a strong technology support model may be overlooked in schools. As a result, neither teachers nor students will get the intended benefit of the substantial investment being made on technology equipment. Advocating for improved technology support in the schools and classrooms is thus an important point for the local union to address.

#### **Bibliography**

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