

Distanced Professional Education to Support Instructional Technology:

A Cost Effective Necessity

Shawn M. Cressler

Saint Joseph's University

Problem Description

Problem Statement

Teachers at all levels of instruction within Highlands School District are not utilizing the numerous digital and online resources available to them.

Introduction and Context

Highlands School District (HSD) is located in Southwestern Pennsylvania north of Pittsburgh along PA Route 28. Highlands School District includes the boroughs of Brackenridge, Tarentum, Natrona Heights and Sarver (World media group, 2012). The current enrollment at Highlands is approximately 2,600 students, with a professional staff of approximately 225 educators and administrators ("Highlands school district," 2012). The district has spent the last few years rapidly increasing the number and variety of electronic, online, and digital resources available for use by instructors. For example at the middle school the level of available technology includes multiple mobile computer labs per grade level, interactive whiteboards in nearly every room, and a host of online services. Technology levels are comparable in most buildings within the district. For years teachers in HSD have enjoyed the benefits of a robust technology support staff and opportunities to participate in small group technology instruction sessions. However, with the recent budget cuts and staff reassignments, the technology support staff (which included trainers and technology coaches) has been reduced to network and infrastructure support only with three full-time technicians serving all five of the district's buildings. Technology trainers and coaches were largely responsible for providing training support to small groups of three to five teachers who had voluntarily requested to undertake technology trainings. As a classroom Science Teacher and a Gifted Support Teacher,

the writer is responsible for using technology to support student learning in Science and enriching curriculum in novel ways for students with advanced cognitive skills and talents. Additionally, the writer has played a role in assisting other instructors with day to day concerns associated with integrating technology.

Problem Description

The technology resources available at HSD are not being utilized in an appreciable or uniform way by the staff. For example the district purchased services from SchoolWebLockers.com, “a leading provider of cost-effective, Web-based tools for collaboration, distance learning, cloud computing and online storage” (“School web lockers,” 2012), however most teachers were completely unaware the service was available. The writer only found out about the WebLockers after asking for permission to utilize DropBox, another online file sharing system to submit digital assignments. A stern memo was issued by the administration reprimanding staff members for the nearly nonexistent usage of the service. In fact, the district distributed login credentials to teachers after bemoaning the web lockers poor utilization; the writer’s login credentials arrived via interoffice mail a full week after the memo of reprimand was distributed. Even with login credentials many staff members continue to eschew the service as they have expressed concerns during staff meetings that they, “have no idea how to use this,” or “don’t even know why we need this.” Administrators and the Information Technology staff were sure that the faculty had been in-serviced on WebLockers at some point. However, a review of the writer’s records from the last few years of in-services indicates this topic was not included in any of the sessions offered.

Additionally, HSD has utilized Progress Book (a Learning Management System from Software Answers Incorporated) for several years. Despite including numerous features including virtual classrooms, student information management, online assignments and lesson plans, nearly all teachers use it only for what is absolutely required by administration, which is as a basic grade book and attendance system. Each year administration stresses that online lesson plans and virtual classroom functions will soon be a required part of lesson plans and instruction. The writer and his cohorts have yet to participate in any germane training for these functions and despite repeated warnings use of the full suite of Progress Book options has yet to be required.

Lack of training opportunities, poor communication, and decreasing levels of instructor support are the root cause of the low levels of technology resource utilization at HSD. Funds once slated for technology support have been eliminated from the budget or redistributed to other training opportunities. Training sessions have been reformatted from small group sessions to 25 – 30 individuals participating in a large group learning setting. Sessions have also gone from half a day experiences to one or two hour sessions. The combination of decreased time and increased class size results in trainings that are much less effective than they once were. Despite the lack of training on specific resources, continued ignorance of what is available, and shrinking support teachers are expected to utilize technology as a standard part of the educational process. Based on future budget forecasts it will be difficult to justify the ongoing cost of technology resources that are neither effectively nor widely utilized regardless of the cause of the dysfunction.

A Review of the Literature

Recent budget changes in the form of drastic cuts have impacted the landscape of public education in Pennsylvania; funds removed from the 2011 – 2012 state budget totaled 860 million dollars (Hart, 2012). As a result of the cuts currently implemented and the threat of new cuts in future budgets, Pennsylvania's school districts have moved to cut staff, reduce services, discontinue summer school programs, and delay the purchase of items such as textbooks and computers (Micek, 2012). The after effects of the recession and the long term ramifications of funding shortfalls have yet to be realized. There is little formal research about the effects of diminished funding at the K – 12 level. What research there is regarding the impact of the recession are centered on higher – education and their response to the ongoing economic recession (Lounder, et al., 2011). Higher education institutions have a wider variety of funding sources than those available to public schools, so it stands to reason that the financial issues identified in higher education will be manifold at the K – 12 level. The lack of research does not indicate that there is no problem but rather that it hasn't been a problem long enough for research to be proposed, undertaken, reviewed and published. Regardless of the dearth of research, staff and service cuts are happening in the Informational Technology (IT) departments of schools all over the country. IT leaders are finding out just how eager their districts and schools are to interrupt business as usual. They're cutting costs, eliminating waste, and streamlining services (Schaffhauser, 2012).

Budget cuts notwithstanding, another contributing factor to the current problem is that those who are cutting costs, eliminating waste, and streamlining services may not have the fullest understanding or the best interests of the institution as motivation. In the case of technology integration projects administrators see themselves as separate from the implementation and use

of technology (Berrett, Murphy & Sullivan, 2012). Policy makers and administrators often protect the status quo as it represents the means by which they have acquired professional power and influence (Moore & Kearsley, 2005). Technology in education is a transformative force and its influence could shift power dynamics possibly unfavorably. Those in positions of authority and even the general public can view teaching as an act that takes place only within a classroom setting (Moore & Kearsley, 2005). When viewed through that paradigm integrating or utilizing technology would only be required at the most simplistic level. Administrator misconceptions about technology can filter down from the top levels of planning to all levels of instruction. As a result deployment of technology is insufficient, fractured, and minimally planned, if planned at all. Many schools invest in technology without a long range plan or a way to assess the impact of its use or disuse (Gordon, 2011), which then is recursively cited as evidence that computers and technology support are not deserving of further funding. As a result, technology investments in hardware, services, and staff training are underutilized, [essentially] wasted resources and opportunities.

Budget cuts and laissez-faire administrative planning run counter to the established best practices and recommendations for technology integration from any number of sources. Administrative leadership should take a role in supporting teachers and developing a common plan for technology use, not reducing technology support staff and leaving the teachers to their own devices (Ertmer & Ottenbriet-Leftwich, 2010). Without a plan or support, computers and technology become nothing more than expensive office supplies that don't supply educational gains as advertised (Gordon, 2010). Effective use of technology in education requires effective professional development. Unfortunately in many districts the funds earmarked for professional development provide only for the equivalent of instructional Band-Aids designed to meet federal

and state requirements without providing real instruction (Berrett et al., 2012). Wright (2010) agreed that technology needs to move beyond the current practice of short term in-services which amount to “here is the technology, and here’s how you turn it on,” to a more long term plan that does not view technology as an accessory that must be implemented as per the directives of accrediting groups at the state and federal level. Professional development for technology integration is a necessity; unfortunately, as mentioned previously, poorly implemented or planned deployment of technology yield results that do not foster continued expenditures on technology centric professional development (Guzman & Nussbaum, 2009; Plair, 2008).

With financial cuts being an ongoing reality, professional development in the area of technology integration will suffer degradation as it is afforded less and less importance in the ecology of education. This current development in education runs counter to the widely espoused observation that that effective technology integration requires effective professional development opportunities (Vockley et al., 2007; Walker et al., 2012; Loveland, 2012). Technology Integration is more than simply having the technology on hand, but rather an apparatus for improving teachers’ effectiveness and ultimately student learning outcomes (Hernandez-Ramos, 2005). It is widely acknowledged that service training programs result in an increased command of technology and its possibilities for the creation of learning opportunities (Guzman & Nussbaum, 2009).

Studies have indicated that distanced or online education is more cost effective in various situations (Neely & Tucker, 2010). Smith & Mitry (2008) state that “the technology of online learning has matured” and that it is an “economically viable option.” Distanced education provides an opportunity to address ongoing concerns of budget cuts, access to information resources, and increased productivity (Pang, 2009). However Smith & Mitry (2008) expressed

some concern that online learning (while having identical academic standards and high levels of interactivity) is not as cost effective as large classrooms. However, as previous professional development at Highlands School District was carried out in small groups, (two - five individuals) online learning opportunities will be able to server more learners concurrently while increasing cost effectiveness and offering a positive return on investment. Atkinson and O'Connor (2007) identify many benefits of online professional development including the ability to work from home as needed, program choices that more closely match individual needs, and learning at an individual pace. Lamenting the new condition of diminished funding will not solve the problem of increasing technology integration with decreased resources. As a result of increased financial pressures and the need to reduce costs, many institutions have investigated distanced education, specifically online education, as a means of reaching more students while driving down costs (Pang, 2009). The resources and funding situation at Highlands School District parallels what was described by Roberts (2008) at Purdue University North Central under the heading "Going online with limited resources." Highlands School District and Purdue University both currently have web-based course delivery systems in place. However, use at Purdue was uneven (Roberts, 2008) and the situation is similar at Highlands. Purdue was hampered by a limited number of dedicated support staff although a pool of trained staff members was readily available (Roberts, 2008), which is similar to the state of staffing at Highlands. Leadership in both places on the issue of distanced education could be described as ambivalent offering neither support nor derision. Purdue was able to offer a series of online courses despite being hampered by resource limitations. With appropriate planning, support and despite limited resources online and distanced education can be implemented effectively (Roberts, 2008).

Distance education, e-learning, online-education, and web based education are all synonyms for courses of study that are mediated by technology, and the most prevalent today is the use of the Internet for delivery. On the whole, effectiveness of distanced education has been widely and well documented (Hernandez-Ramos, 2005; Pang, 2009; Russell, 1999). Summers, Waigandt, & Whittaker (2005), in their study of an online statistics course indicate that distance learning via web instruction is a viable opportunity to increase availability of instruction and that students taking statistics on the web learned as much as students in a traditional face-to-face course. Those results fall in line with the hypothesis proposed by Russell (1999) that there is “No Significant Difference” between the learning outcomes of traditional face to face education and what can be learned via distanced education. Pang (2009) offered concurrent results when studying video-driven multimedia distanced education; the collected data indicated that the perception that traditional face to face trainings were pedagogically superior to distanced education was erroneous.

In the face of budget cuts with the resulting scarcity of resources and the need for educators to continually keep up with technological changes despite limited resources (Loveland, 2012), distanced education offers an economical and demonstrably effective way to conduct increasingly important professional development activities necessary to foster technology integration.

Anticipated Goals

1. Faculty and staff will enroll in and successfully complete the Distanced Professional Development program.

- The effectiveness of the program cannot be assessed if a group of volunteers agrees to pilot the program and provide feedback on the learning activities, their overall satisfaction, and the level to which they felt engaged in the learning process. Teacher participation data and feedback will be vital in demonstrating the viability of distanced professional development for Highlands School District faculty and staff.
 - Performance/Learning Objective: Participating staff and faculty members given access to course materials and activities, and communication with instructors will complete 100% of the activities presented as a part of the Distanced Professional Development program.
 - Performance/Learning Objective: Participating staff and faculty upon completion of the course activities will provide a thoughtful written assessment of the course which will be required to include the following; a review of at no less than two of the learning activities, an assessment of how engaged they felt in the course, overall satisfaction with the experience and suggestions of what could be improved.

2. Faculty and staff will increase will increase utilization of targets technology resources including hardware, software, contracted services, and media within Highlands School District.

- A wide variety of technological resources are already available to teachers within Highlands School District and it is vital to student and staff success that these resources are effectively employed. Faculty and staff must become conversant with the tools available and implement them in an ongoing and appropriate manner to increase their

own productivity and to afford students a wide variety of authentic, collaborative, and novel learning opportunities.

- Learning Objective: Participating faculty and staff will, after completing the distanced professional development course, integrate target technology resources into at least 60% of all classroom activities.

3. Participating faculty and staff will be able to effectively and fully utilize the targeted technology resources autonomously.

- It is vital that faculty and staff have a functional knowledge of the target technology resources. Individuals will not be able to effectively utilize technology if they are wary that it will break, malfunction, or not perform as expected. Faculty and staff must be familiar with the features and functions of the target technology resources to effectively employ them. Also, individuals need to be able to deal with minor malfunctions and errors as they occur without having to rely on technical support staff.
 - Learning Objective: Participating staff and faculty, after completing the distanced professional development course, will be able to demonstrate with 100% accuracy all features and functions of the targeted technologies and complete basic troubleshooting tasks when presented with simulated errors or malfunctions.

Proposed Solution:

Drawing from the Instructional System Design Process, ISD (Moore & Kearsley, 2005) the proposed solution will be divided into 5 phases. The design process phases include Analysis, Design/Planning, Development, Implementation, and Evaluation.

Phase I Analysis: May 2013

In early May an open invitation for teachers and staff interested in participating in developing technology training materials will be distributed via email. Respondent teachers and staff will complete a survey in order to assess their experience, skills, and interest in employing technology in education. Teachers and staff members who had previously received additional training as technology trainers or technology coaches will be approached individually about participating in order to utilize their germane skill sets. Volunteer teachers and technology coaches will be joined by a representative from administration and a member of the IT department to form a Distanced Education Professional Development Committee. By mid-May the committee will develop and conduct a needs assessment for the district. Points of assessment include skills needed by the faculty, current levels of technology use, overall instructor areas of technology integration interest, technology hardware requirements, and technology and resources currently available within the district. The data gathered from the needs assessment will be employed to inform the actions taken in Phase II.

Phase II Design/Planning: June – July 2013

The Distanced Education Professional Development Committee will use the data gained from the Phase I needs analysis to articulate the specific learning goals and outcomes of the professional development program. As a main focus of this program is providing a cost effective alternative to the previous training and support structure, one of the main emphases of the committee will be selecting professional development topics that center on technologies or services that are already available within the district. Once two target technology resources, (one hardware and one software or digital) required skills for success, and desired outcomes have

been identified, the Distanced Education Professional Development Committee will begin course planning and design. The committee will spend the bulk of this time making sure they fully articulate the learning goals and how learning will be demonstrated by the participants (Moore & Kearsley, 2005.) The Design Phase will conclude once the committee has developed two complete curriculums, one for a hardware resource and one for a digital or software resource. Completed curriculums will include detailed descriptions of units, lessons, individual learning activities, required resources, and learning materials. The Distanced Education Professional Development Committee will evaluate course requirements to determine which materials can be created “in-house” using their skills and talents as denoted by the survey completed when they volunteered or were approached. Resources that require out-sourcing will be critically examined to determine if acceptable alternatives can be generated in-house. In the event that a vital resource must be out-sourced, the Distanced Education Professional Development Committee will follow the district’s established procedure for collecting bids and submitting invoices to the Business Office.

Tentative Budget for the Distanced Professional Development Course:		
Item	Description	Funding Requirements/Justification
Committee Cost	Committee members will be paid current curriculum rate, \$23.50/hour for time spent on course development, implementation and management. Estimated committee size of 5 - 10 with 20 – 40 hours each allotted to complete the required course creation and evaluation tasks.	\$10,000.00 This cost is still well below the salaries of the positions eliminated and represents a onetime expense to generate two professional development courses that can potentially be utilized with all 225 Highlands Employees

<p>Course Instructor Stipend</p>	<p>Teachers administering the Distanced Professional Development Courses will need to dedicate several additional hours each week to assisting students, grading assignments and monitoring progress. 4 teachers will need to devote 36 – 40 hours to the course.</p>	<p>\$4000.00 The 4 teachers will be supporting the profession development of 40 – 60 individuals with the cost per participant between 67 – 100 dollars. This compares favorably to the small group instruction sessions previously conducted.</p>
<p>Moodle Hosting</p>	<p>The Distanced Professional Development course will require server space to host it. The district already maintains a dedicated Learning Management System server. An additional instance of Moodle will need to be created by the IT staff</p>	<p>\$0.00 The IT staff estimates that the LMS server is running at less than 25% capacity and the addition of another Moodle instance with 40 – 60 students will not overtax the extant hardware. The IT staff has indicated that another Moodle can be set up in “less than an hour.”</p>
<p>Hardware and Infrastructure Investments</p>	<p>Access to computers, equipment and the internet will be required to develop and offer the course to faculty and staff.</p>	<p>\$0.00 Faculty and staff members have already been provided with access to computers, the district is fully networked and the courses developed will focus on technology that is already available</p>
<p>Software Investments</p>	<p>To develop the resources and materials for the course will require access to a wide variety of media/content creation software including but not limited to Adobe Master Suite, word processing Software, HTML editors and presentation software....</p>	<p>\$1,000.00 The required software has come bundled with all faculty computers purchased within the last 5 years. Funds here are for possible upgrades or support packages as needed</p>

Media Creation	Certain pieces of media or materials needed to implement this course may be beyond the scope of the committee members or the district to create or provide. Custom media will follow the district’s bidding process and the lowest bid will be accepted	\$3,000.00 Custom media creation is expensive and will be avoided at all cost. But in the event it is unavoidable it is important to have funds available.
Estimated Total:		\$18.000

This budget contains a number zero cost items to emphasize that the planning has been focused on utilizing resources and staff that are already present within Highlands School District.

Phase III Development: July – August 2013

During the development phase teachers with prior training as technology coaches, trainers and IT staff will serve as subject matter experts to aid in the development of the required materials and resources. Committee members with media and curriculum creation skills will be tasked with developing appropriate materials. Members of the IT staff and committee members with appropriate skills will collaborate with other team members to ensure than materials are properly formatted and compatible with Highlands’ current Learning Management System, Moodle. Committee members will generate an open invitation to the faculty and staff asking for unpaid volunteers to participate in ongoing small scale testing of the courses in order to identify issues before implementation with a larger pool of participants. Small scale testing can be undertaken in an ongoing manner as the course materials are completed and implemented. Feedback from small scale testing students will be vital for identifying issues that could negatively impact Phase IV.

Phase IV Implementation: September 2013 – Mid November.

Open enrollment for the online courses will be announced during the opening day ceremonies for the 2013 – 2014 school year. The Online Professional Development Courses will be limited to two classes of 12 – 15 participants for each course for a total of four courses. The 48 – 60 possible students represents a larger group of faculty and staff than technology trainers and coaches were able to reach under the previous in-service training system. Participating faculty and staff will complete their selected course during the first nine week period of the school year and receive time to complete activities and assignments scheduled during in-service activities.

Phase V Evaluation: Mid November – December 2013

Evaluation of the Distanced Professional Development course will utilize the AEIOU model, which stands for Accountability, Effectiveness, Impact, Organization Context, and Unanticipated Consequences (Simonson, et al., 2009). Accountability questions attempt to determine if the activities listed in the goals and objectives of the project have been accomplished in a timely fashion and met the specifications regarding people, materials, and other elements that were identified in the project plan (Sorensen & Sweeney, 1997). Accountability will be measured in on two levels individually, for participants and instructors and organizationally for the Distanced Education Professional Development Committee. Moodle login and submission records will be reviewed to indicate whether or not participants completed all required aspects of the professional development course. The Distanced Education Professional Development Committee will be evaluated using Moodle records concerning the administration of the courses including: committee member login data/frequency,

records of communication with course participants, committee meeting minutes, and communication logs. Effectiveness is focused on assigning values to activities that make up the learning opportunity including student attitudes and knowledge (Simonson, et al., 2011).

Effectiveness will be evaluated using feedback gathered from course participants. A standardized questionnaire was proposed for this, however, the prevailing view of the district is that surveys or forms may reduce authentic feedback as they reduce choices and limit feedback to just the choices available within the survey. An open ended evaluation will allow participants to offer genuine and personal feedback about their involvement in the course. Effectiveness will also be evaluated in a more traditional manner; course instructors will evaluate the assignments and activities submitted by the participants. Assignments will be assessed according to the goals and rubric described in the planning phase of course development. Impact looks for the affects that have resulted from participation in the Distanced Professional Development Course. Lesson plans of participating teachers will be collected and analyzed for evidence of increased technology integration, with the target threshold being 60% of all weekly activities.

Additionally, support requests to the IT department will be analyzed, and a reduction in requests for support should show a downward trend as teachers complete the program and become more self-reliant. Organization Context, with the purpose of this element of evaluation being to identify policies, organizational structures, or environmental factors that augmented or reduced the ability of the program to effectively implement activities and achieve desired outcomes (Simonson, et al., 2009). Organization Context data will be gleaned from student feedback papers and through interviews with key participants in the course including a limited number of students, instructors, course developers, and administrators. Unanticipated Outcomes will investigate what changes or unintended impacts resulted from the Distanced Professional

Development Courses. These outcomes might be negative or positive in nature. Analysis of data from course participants, interviews with participants, instructors, and developers will help provide evidence of unanticipated outcomes.

Phase VI Revision: January 2014

Phase VI of this proposal will only be implemented if this pilot program is deemed a success and is approved by the administration and the school board for continued operation, as additional funds will be required to make changes to the curriculum and to continue to compensate the Distanced Education Professional Development Committee and the course managers and instructors. Revisions will be made to reflect the feedback provided by participants and the data gleaned during the assessment process. Goals, outcomes, activities, resources and materials will be revised as needed. Unanticipated outcomes, and issues of organization context as uncovered by the AEIOU assessment will be addressed by the revision. In cases where institutional policy has come into conflict with effective learning it might become necessary to explore the possibilities of institutional reform with the administration or the school board.

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