Technology coordinators: the relationship between employment responsibilities and need for ongoing professional development

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Abstract
The intent of this research paper is to examine the responsibilities of technology coordinators in the P-12 educational environment and the association of ongoing professional development for technology coordinators. The research cited indicated that the responsibilities of technology coordinators have evolved to include complex technical skills. Commonly cited duties include network administration, maintenance, instructional design, staff development, budgeting and acquisition, software evaluation and installation, multimedia production, management of communication and online resources. The extent of suggested expertise implies that technology coordinators have need for ongoing professional development. Informal conversations were held by this researcher with several technology coordinators to gather general opinions concerning their own professional development.

The technology coordinators varied in their educational backgrounds but were similar in their demographic environments. The informal conversations revealed that the technology coordinators felt they needed continued education in technical skills to perform their duties responsibly. The dialogues indicated that most of the technology coordinators are self-taught and self-financed or obtain support from their district's local Area Education Agency. The technology coordinators indicated that they needed ongoing professional development, particularly in the area of network management. The relationship between the technology coordinators' perceptions about their professional development and the actual funding and administrative support available may indicate a difference that warrants further investigation in a more formal study.

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TECHNOLOGY COORDINATORS:
THE RELATIONSHIP BETWEEN EMPLOYMENT RESPONSIBILITIES
AND NEED FOR ONGOING PROFESSIONAL DEVELOPMENT

A Research Paper
Submitted
In Partial Fulfillment
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Master of Arts in Education

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The intent of this research paper is to examine the responsibilities of technology coordinators in the P-12 educational environment and the association of ongoing professional development for technology coordinators. The research cited indicated that the responsibilities of technology coordinators have evolved to include complex technical skills. Commonly cited duties include network administration, maintenance, instructional design, staff development, budgeting and acquisition, software evaluation and installation, multimedia production, management of communication and online resources. The extent of suggested expertise implies that technology coordinators have need for ongoing professional development. Informal conversations were held by this researcher with several technology coordinators to gather general opinions concerning their own professional development. The technology coordinators varied in their educational backgrounds but were similar in their demographic environments. The informal conversations revealed that the technology coordinators felt they needed continued education in technical skills to perform their duties responsibly. The dialogues indicated that most of the technology coordinators are self-taught and self-financed or obtain support from their district's local Area Education Agency. The technology coordinators indicated that they needed ongoing professional development, particularly in the area of network management. The relationship between the technology coordinators' perceptions about their professional development and the actual funding and administrative support available may indicate a difference that warrants further investigation in a more formal study.
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Introduction

The integration of technology in a school system requires many resources and support systems. The scope of issues includes planning for the use of technology, writing curriculum, conducting staff development, budgeting and purchasing, installation and maintenance of equipment, and teaching and using technology in the classroom. In addition, ongoing support of curriculum directors, purchasing agents, classroom teachers, maintenance personnel, media specialists, and administrators is necessary. However, there is one position that becomes essential to coordinate the efforts of all others, the technology coordinator. The technology coordinator takes an active role in coordinating technology integration through the use of leadership and organizational skills.

When one technology coordinator alone may not be able to meet the needs of a complex large system, the organizational structure may include a director of technology who will be responsible for coordinating other personnel in the organization. Smaller institutions often cannot afford to employ personnel to include a technology staff beyond the coordinator and possibly a technician. In these instances the coordinator may need to wear many hats. It is in this situation where interest in support for the technology coordinator may become less prevalent than meeting the needs of the users. This situation may cause a paradox for the person who is designated as the technology leader, possessing a high level of skill in the implementation of technology. The technology coordinator, as a leader in technology implementation, could become the person with the least support and ongoing training. The following discussion explores the issue of support and training for technology
coordinators by examining the growth and use of technology in conjunction with the specific skills required of a technology coordinator.

Methodology

Literature was chosen through online searches and databases in professional journals. The criteria for selecting literature included educational literature and instructional technology publications. The criteria for selecting the references cited included professional journals, publications, online resources, and conference papers for educational and information technology specialists.

Informal surveys were conducted with a dozen technology coordinators chosen at random from a professional cadre that meets on a monthly basis to discuss issues and trends of educational technology. Participation was optional. The coordinators were asked various questions concerning their duties and professional needs for training. The conversations were conducted over a period of several months. The conversations focused on the responsibilities and professional development for technology coordinators. Anecdotal notes were recorded and summarized by this researcher.

Analysis and Discussion

Technology Coordinator Role

Since the early 1970s, educational institutions have been increasingly active in acquiring technology (Stallard and Cocker, 2001). In the 1980s, P-12 schools began to set up labs for computer-based instruction, concentrating the use of computers in one location in the school and limiting the use to those teachers who had the techie based knowledge. This arrangement may not have promoted integration into the
curriculum, but did restrict needs for maintenance and management. This trend began
to change. In the 1990s, P-12 schools experienced a frenzy of networking, wiring
schools for access to network and Internet resources (Stallard and Cocker, 2001). In
addition to curriculum and instructional applications, now present in computer labs,
educational institutions discovered that the use of network communication could
leverage resources previously unavailable through information technology.
Leveraging resources, according to Stallard and Cocker, is defined as “using a
resource to the maximum extent” (p.25). By the mid-1990s, schools were actively
expanding their use of the Internet, distance education, and forms of asynchronous
communication on a wider scale. These resources were and are today accessed
through sophisticated networks that require administration and maintenance.

Technological advancements called for employment of individuals who were
responsible for the planning, integrating and maintaining technology integration in
educational environments, particularly in P-12 schools. A common trend was, and
still is today, the appointment of at least one person directly responsible for assuming
the role of coordinating the integration of instructional technology and supporting
related maintenance issues. Other positions for support personnel may be added to
provide maintenance. Sometimes these needs are outsourced or filled with in-house
personnel. Larger districts sometimes employ building coordinators and technology
teachers and a district coordinator, creating an information technology services
division or department. Positions can be filled by administrators or contracted staff.
Sometimes other positions are not added and all responsibilities for maintenance and
integration fall to the technology coordinator (Moursund, 1992).
The term “technology coordinator” has been applied widely to describe the role of the person who assumes the responsibilities related to the use of technology in schools. Employees with various educational backgrounds and job descriptions may serve in the capacity of technology coordinator; some may be certified teachers, administrators, technicians or off site consultants. In addition, “media/technology coordinators”, or “technology resource teachers” (TRTs) are descriptions that may be used to describe the person who is responsible for managing technology related issues in a district or building (Moallem and Micallef, 1997).

Qualifications for the position of a technology coordinator may vary. The technology coordinator may serve in rural or urban schools, hold a degree in education or a field related to technology, or not have a degree. The technology coordinator may serve a building, multiple buildings or an entire P-12 district. This role may vary from urban to rural areas. The temptation of a smaller district may be to distribute the tasks of technology implementation to existing staff. Specific skills are necessary to satisfactorily perform the job of a technology coordinator. As a district increases in size and budget, the position of the coordinator becomes more defined as managerial or administrative with support staff performing departmentalized duties. Some districts employ persons as technicians to assist in the daily maintenance of the desktop units and servers. Some districts use Library Media Specialists as their building coordinators and may or may not have a district technology coordinator. Districts may employ technology teachers as technology coordinators part time. Many configurations exist for districts of varying sizes. Smaller districts often do not employ multiple persons to meet the needs of the
district due to financial constraints. This places an even greater burden on the limited technology staff to obtain appropriate training and maintain expertise in operations (Moursund, 1992).

Loucks and Zacchie (cited in Marcovitz, 2000) stated that successful innovation of technology requires a local facilitator. According to Marcovitz (2000) technology coordinators need to be dedicated to education, have good managerial skills, know the educational system and how instructional methods change, possess good teaching, communication, and listening skills, in addition to technical knowledge.

A broad spectrum of knowledge and continuous learning must be evident for a technology coordinator to be able to maintain and manage information technology. Technical knowledge is an important component for all technology coordinators. Most technology coordinators, however, have concentrated on preparing for an education career that focuses on educational systems instead of technical systems. Defining the duties of a technology coordinator clarifies the challenges encountered day to day and assists in outlining the need for training. A closer look at what schools are implementing shows that a technology coordinator’s responsibilities span many areas. They may include planning and purchasing of infrastructure for Local Area Networks (LAN’s) and Wide Area Networks (WAN’s).

Network infrastructures may include phone and cable television systems within a building or between multiple buildings. Some infrastructures include video conferencing classrooms and video production studios. This implies that the technology coordinator must be knowledgeable about network topographies, purchase
and maintain network devices (hubs, switches, routers, Network Interface Cards, Ethernet and coax cable, firewalls and wireless communication devices), write Requests for Proposals (RFPs) for contracting installation labor, coordinate installations with outside sources, and in some instances help with or independently install the infrastructure (ITTE, 1995b).

The technology coordinator is often responsible for maintenance issues, either directly repairing problems or coordinating the repair of problems with another employee. Maintenance of a network may include testing and verifying equipment, monitoring usage, administering security measures and troubleshooting connectivity and application issues. A large part of network administration includes the installation, maintenance and administration of servers (network operating system software, security software and/or hardware, diagnostic and backup procedures). It also includes the administration of users’ accounts for file sharing and email, monitoring logs generated by the servers, updating data base information, and protecting servers from virus or use attacks. The technology coordinator may be expected to perform network administration duties on multiple operating systems. Any given network may have several different system software platforms. Communication services encompass multiple areas of expertise. The area of communications is defined for purposes of this paper as World Wide Web applications, design and development of web sites, filtering appliances and software, cable television, video conferencing, and phone systems. Communications may include email servers and clients, web browsers, authoring tools for web design including the languages of web design, chat rooms, bulletin boards, security
measures, laws on usage, privacy rights, filtering, financing services for the district, online databases, web services, content delivery, creating or accessing online resources, phone systems and many more (ITTE, 1995b).

In addition, districts implement a variety of network and operating systems, therefore making it necessary for a technology coordinator to be knowledgeable in multiple network areas. This may require ongoing training in multiple areas of technology. The more complex the system, the more expertise the technology coordinator is required to possess (ITTE, 1995b).

If the district does not employ a certified network specialist, or technician, the technology coordinator often has to manage these responsibilities. The technology coordinator must have a good working knowledge of the network configuration, bandwidth use, and topography. The technology coordinator needs a strong awareness of the district’s networking needs and purchasing policies and procedures. Infrastructure repair and upgrades must be delivered in a timely manner. If the use of technology is disrupted, instructional and administrative activities will be disrupted, which will undermine the technology program. Having a technical specialist who provides technical support on a full-time basis is necessary to maintain use on a daily basis (Ghala, 2001).

Budgeting issues arise with the addition of technology. The coordinator needs to budget and plan for future acquisitions and integration. Many factors can affect the budgeting process. In order for a technology coordinator to be an active participant in the budgeting process, they must know how to develop an appropriate budget, prepare and monitor the budget, and work with district administration on budget issues. A
well-prepared technology coordinator can effectively support technology in his/her district (Brody, 1995).

In addition to having technical knowledge the technology coordinator needs to know the users' instructional needs. Technology coordinators plan for and implement appropriate resources, access and deliver staff development on how to use the network, devices, peripherals and applications for content delivery (Ghala, 2001).

The role of the technology coordinator is complex because it is determined by the needs of the institution and the internal structures. It involves whole-school curriculum management with new technologies being organized to meet the needs of the users. However, if the role is focused on technical issues rather than human development issues, it creates a dependency on the technical expertise of the technology coordinator. The technology coordinator’s duties of systems manager and technical support may reduce the time available for curriculum management issues and the time set aside for personal resource management. If the technology coordinator’s time is limited to providing technical support, the technology coordinator will have limited capacity for performance in the role as an instructional designer (Owen, 1992).

Maintenance of services often becomes the top priority for a technology coordinator when technology is instituted with limited staffing for technology support. Resources beyond the technology coordinator’s environment may be needed to meet needs that were once met by the technology coordinator alone (Leadership and Technology, ITTE, 1995a).
If the technology coordinator needs additional technical skills, he/she may be obtained by taking technical courses for certification. Obtaining a professional certification means an exam is passed that validates technical knowledge and abilities in particular areas (Network and certification training, 2003). Professional training for technical skills may be obtained through technology training centers, online resources, community colleges and universities. Common certifications may include Microsoft Certified Systems Engineer (MCSE), Novel Certified Network Engineer (NCNE), and Cisco Certified Network Professional (CCNP), Network +, A+. Multiple certifications are available for networking (Cisco career certification, 2003).

Districts may choose to outsource maintenance that requires advanced technical skills if their budget allows. Server maintenance may cost from $80.00 to $125.00 per hour. Purchased service time for desktop unit repairs can cost $50.00 to $80.00 per hour. Sometimes a district purchases contracted services for a year’s length over a given number of hours. The vendor will then charge a lower per hourly rate, dependent upon the types of services rendered and the amount of hours purchased (Phil Kenealy, ACES, Inc., personal communication, July 17, 2002).

As well as technical skills, the technology coordinator is responsible for the evaluation, acquisition and installation of software. Software usage is a constant need for districts using technology to deliver content, publish and manage data, create productions, and operate systems. The technology coordinator has a significant role in researching appropriate software, budgeting, acquiring, and planning for the integration and implementation, installation, training the users, maintaining upgrades, inventory, copyright and licensing (Becker, 1992).
The technology coordinator’s position requires competency in many non-technical areas, as well. The coordinator must provide leadership in instructional design. Technology coordinators’ roles have common trends. The technology coordinator has an integral part in implementing and maintaining the use of the Internet and communications systems, planning curriculum integration and training staff on use. A distinguished knowledge base must be acquired in an ongoing process to do so proficiently. The challenge may be to determine how much training is necessary, who should obtain it, and how to obtain it at a cost effective rate. Time for planning these activities must be included in the daily routine of performing basic technical maintenance. Given the complex various tasks inherent in the work of the technology coordinator, ongoing training should support him/her for daily responsibilities. The fast rate of change in technology often poses a challenge for even the most aggressive learner (Marcovitz, 2000; Moursund, 1992).

Conversations with Technology Coordinators

The second focus of this research paper is to define the status of training and ongoing education for technology coordinators in the P-12 educational environment. How does the technology coordinator prepare for rapidly changing needs in an educational environment? Interviews with a group of northeast Iowa technology coordinators help to provide insight on job responsibilities and ongoing training of technology coordinators. To maintain confidentiality comments have been aggregated and no individual has been identified.

Input from technology coordinators in a small cross-section of northeast Iowa schools was solicited by this researcher through informal conversations.
Conversations were held with a dozen technology coordinators in order to capture their insight for defining their own professional development needs. The conversations primarily consisted of areas of responsibility that the technology coordinators held in their current positions and how they obtained professional development in those positions. They identified resources for training in areas that were not outsourced to a third party vendor or provided by other district staff. Common threads were found throughout the conversations, including online courses, onsite training with third party vendors, higher education, district or state training/workshops, and support via Area Education Agencies (AEAs) workshops/in-services.

Through discussions, the technology coordinators indicated several areas of responsibilities and ongoing professional development. Some of these areas included duties as teachers, web designers, curriculum writers, and administrators of networks.

The technology coordinators were also asked to identify resources for training most beneficial to them; whether or not they felt their administration supported them in district led initiatives for training and continuing education; areas they needed more training in; and how training was funded.

Most of the coordinators who chose to participate in the conversations were secondary teachers before becoming technology coordinators. A few were elementary teachers prior to obtaining positions as technology coordinators. Some of them indicated that they had received Masters Degrees in either Library Media Education or Educational Technology.
All of the coordinators indicated that they had no formal training in grant writing and that their districts did not employ professional grant writers. They also indicated, however, that they were responsible for acquiring the majority of grant funds for technology. Some of them indicated that the Area Education Agency (AEA) did lend support to grant writing. One or two indicated that books, workshops and sometimes peers were other resources available. They did not indicate if the districts they worked for reimbursed them for their own materials or time.

Network planning and administration was almost unanimously learned through self-instruction or through offsite support from their AEA. Some indicated that training occurred through Cisco Academy classes and/or through community colleges. Only some of those who indicated that they participated in Cisco Academy networking classes were supported through financial assistance from the district, but not all.

Administration of network servers was almost always learned through on-the-job experience. A variety of platforms was discussed including Novell, Macintosh OS, Windows, and Linux. Only a few indicated that the AEA assisted in systems administration staff development for technology coordinators. They did not indicate which types of servers were supported. Some of them did indicate, however, that learning the operating systems of Apple brand servers was more frequently assisted by the AEA. These instances included release time from the district but no additional funding on the part of the district for ongoing professional training. They indicated that they were self-taught both concerning hardware and software of server maintenance.
When visiting with the technology coordinators about repair issues they disclosed a range of resources, including offsite workshops, manuals/textbooks, online courses, experience on the job, AEA staff development, conferences and offsite training centers. Most all of them concurred that the district did not fund any of this training. It was funded out of their own pockets or through grants. Most of them indicated that the majority of skills that they possess for repair and maintenance were self-taught.

Only a few of the coordinators indicated they had any knowledge about writing requests for proposals (RFPs) which are used in planning and receiving bids for technology based projects. All of those who had experience with writing RFPs indicated that they were self-taught, with the exception of two who indicated that the AEA was helpful in providing some guidance though not through formal in-service.

When asked how they learned interpersonal communication skills and supervisory tasks for staff working with technology services, none indicated any formal training. Some of them indicated that it was not an applicable question, as they did not have additional staff to work with in their department. Most indicated that they were self-taught or used peer input. Those who did have other staff to supervise felt that interpersonal skills were important.

Additional information was solicited through these conversations concerning the best resources, support from their school administration, future needs for in-service or training, and funding for training.

The majority of technology coordinators felt that the AEA and onsite or offsite hands on training experiences were the best resources for leaning new skills.
Only one coordinator mentioned that self-taught experience was a resource, but did not clarify if it was a reliable one. Most indicated they preferred support from professionals who specialized in training for specific skills. Some also indicated that their peers or support staffs were resources for them. One coordinator also mentioned online resources but did not identify the specific resources.

When discussing support from the administration, almost half of the coordinators indicated that they felt their administration supported them. One coordinator specified that support was available if requests were within the budget. Half of the coordinators felt that their administration was not supportive. No reasons were given for their perceptions of support.

Almost all of them felt that the priority of future needs would include learning server operating systems and support, web page development, and network administration. Some indicated a need for more learning in the areas of curriculum and staff development, integration and assessment and multimedia resources.

When asked about funding for training most indicated that if the district funded staff development for the technology coordinators it was through Phase III funds allocated by the State of Iowa, general fund, or grants. One person indicated that funding for some training was provided by the district’s support levy. Most indicated that they provided their own funding for training.

*Summary and Conclusions*

Stallard and Cocker (2001) suggest that educators will have to invent new roles for themselves in the face of the political, economic, and demographic pressure to change as information technology services change. Technology coordinators may
have to reinvent themselves at a faster rate than in the past. Professional support is necessary to do so.

Will schools support technology coordinators with the appropriate training necessary to meet the challenges that development and innovation bring? The literature defined the roles of technology coordinators but did not discuss in depth the need for ongoing professional development for technology coordinators. It addressed the need for ongoing professional development delivered to staff by the technology coordinator, but rarely discussed support for the technology coordinator.

Questions are brought to mind with the disparity between the responsibilities of a technology coordinator and the ongoing need for professional development to meet those responsibilities. Is certification by the State Board of Education necessary for technology coordinators? Are financial initiatives necessary to implement ongoing training for technology coordinators? Could the business community add to the quality of leadership in technology coordinators through partnerships? Are district hiring practices concerning qualifications in conjunction with district expectations of performance? Can institutions of higher education contribute to the ongoing professional development of technology coordinators?

Does the State Board of Education need to define the role of the technology coordinator and require certification to better address the needs for ongoing professional development? To date there are no regulations in the state of Iowa mandating the qualifications, certification and/or duties of the technology coordinator (Endorsement numbers, 2003). In light of the rapid pace in which changes occur in the field of Information Technology certification at the state level may help to bring
some qualification standards to the forefront for preparing technology coordinators, or it may hinder smaller school districts from hiring certified personnel due to budget constraints. These are issues that may need to be addressed by Iowa’s educational leaders.

Are financial initiatives necessary to implement ongoing training for technology coordinators? With the absence of Phase III funding from the State of Iowa, technical training costs become the responsibility of the employee or of the district. The high cost of training may be a factor that prohibits ongoing development for technology coordinators and districts. Solutions for financing ongoing training for technology coordinators need to be sought by districts employing them.

Could the business community add to the quality of leadership in technology coordinators through partnerships? Business relationships with education may be an initiative to pursue in order to obtain ongoing professional development for technology coordinators. Stallard and Cocker (2001) pose the question of where educational institutions will find leadership for instructional technology. Some technology coordinators may need to participate in training directed for the business community. Local communities may leverage resources to meet the needs of information technology in both the business sector and the education field.

Are district hiring practices in alignment with district expectations of performance? A district may hire a technology coordinator and expect him/her to address the curriculum and instructional needs of the district, network administration, and technical support. These may be unrealistic expectations for one position. Additional personnel may be required. Outsourcing may be an option. The cost of
outsourcing all additional technical support, however, is sometimes prohibitive. Therefore, the district may need to consider hiring additional permanent support personnel. This programming may require identification of realistic expectations and long term budget projections.

Can institutions of higher education contribute to the ongoing professional development of technology coordinators? Higher education may be continually reinventing curriculum for preparing technology coordinators based upon current needs. Would it be possible for technology coordinators to participate in classes specifically designed for them as continuing education with credit or certification? This partnership may allow both technology coordinators and institutions of higher education to continue to reinvent the role of applied technology in education with an up-to-date knowledge base.

All of these questions need to be addressed for technology coordinators to adequately perform the expected responsibilities of their complex jobs. The integration of technology in the education system is a process, as should be the professional development of the technology coordinator.
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