LINKED LEADERSHIP: THE ROLE OF TECHNOLOGY IN GIFTED EDUCATION COORDINATORS’ APPROACHES TO INFORMED DECISION MAKING

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ABSTRACT

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The purpose of this study was to explore the role of technology in the professional leadership practice of gifted education coordinators. An adapted version of the Teacher Technology Integration Scale (TTIS) was administered to 36 gifted coordinators recruited at meetings of regional gifted coordinator groups affiliated with the state professional and advocacy organization for gifted education. The adapted TTIS gathered self-report data on gifted coordinators’ perceived technology skills, attitudes and beliefs toward technology, and frequency of using various technology tools in their professional roles through 49 rating scale items. Short answer items were added to the original instrument to gather demographic data and information regarding how participants used technology to perform specific common job duties of gifted coordinators.

Five gifted coordinators also participated in semi-structured interviews in which they were asked to describe the sources of information and expertise they accessed to assist them in making a recent high-stakes decision or recommendation about a gifted education program they administered and what, if any, role technology played in that process. Additional interview questions focused on the role of technology in participants’ informal learning and communication and collaboration with colleagues and peers. As Wenger and Lave’s research on communities of practice provided a theoretical framework for the study, interview participants were also asked to reflect on whether or not they felt they were members of “communities of practice” related to gifted education, and, if so, how they used technology in their interactions with those communities.
Leadership both within the gifted coordinators’ school districts and regional gifted education organizations were found to influence participants’ use of technology in informal learning and leadership. Although support for the idea that technology can be a powerful tool for professional learning was nearly universal, gifted coordinators who believed there was a vision for the use of technology in education in their school district and who perceived high levels of support for technology integration also expressed higher levels of technology-self efficacy and more extensive use of technology. Additionally, gifted coordinators who gave high ratings to their own technology skills also reported frequent use of online resources to support their informal learning and professional practice. Uneven technology skills among peers and a lack of leadership for embracing online tools were cited as barriers to making greater use of Web as a platform for professional collaboration. The researcher provides further discussion and recommendations for learning designers and school and professional association leaders for leveraging technology to better support communities of practice to enhance gifted coordinators’ professional learning and capacities for leadership.
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CHAPTER I. INTRODUCTION

Most school districts in Ohio (and, likely, school districts in most other states) employ only one gifted education coordinator, and many smaller districts “share” a gifted coordinator with neighboring school systems. Therefore, these educators, like others serving in “specialist” positions, rarely have access to others who share their specific roles and responsibilities within their schools with whom they can consult and collaborate. Thus, to the extent that learning from and collaborating with role peers occurs, it most often does so through peers employed by other schools or regional educational service centers. While some face-to-face contact with role peers may occur through occasional regional meetings, conferences, and professional development events, day-to-day opportunities for informal knowledge sharing are rare. Unlike other educators who may interact with role peers walking down a school hallway, pouring coffee in the faculty lounge, or waiting in line at the photocopier these casual opportunities for knowledge and resource sharing are very limited for most gifted education coordinators.

Additionally, in Ohio, once an educator earns an initial license or endorsement in gifted education, there is currently no requirement to take additional coursework in gifted education in order to maintain licensure. Therefore, it is rare for college and universities to offer formal courses in gifted education beyond those that are included in their initial licensure or endorsement programs. While gifted coordinators, like almost all educators, are required to participate in ongoing professional development coordinated at the local level, the fact that gifted coordinators typically work alone makes it unlikely that professional development opportunities (e.g., in-service workshops) brought to the district will focus specifically on their roles or the population of students they serve. Whereas professional development related to gifted education
provided within districts is rare (Westberg, Burns, Gubbins, Reis, Park, & Maxfield, 1998), when it is provided, it is often delivered by (and, therefore, not to) the gifted education coordinator.

Thus, formal training in gifted education for licensed gifted coordinators has largely been limited to their participation in regional and state level workshops that last from a few hours to a few days. These forums provide limited opportunities for in-depth collaboration, but these conferences and workshops have provided important opportunities for professional networking and resource sharing. However, many schools in recent years have sharply curtailed spending on professional development opportunities (particularly those that require travel) as a way to help address budget shortfalls while limiting cuts to direct services for students, and this trend is likely to continue in the near future given the state of school budgets in the wake of the recession.

Therefore, for specialists like gifted coordinators, telecommunication tools that can help overcome barriers of time and physical distance may offer the only practical options for fostering ongoing peer-to-peer learning and professional learning and collaboration, particularly during periods of budget austerity. Yet, beyond evaluations of formal online training programs, little research has been conducted on how education leaders like gifted coordinators use online tools to access information, advice, and support to help them make informed decisions and provide appropriate leadership in their schools and organizations.

Additionally, the concept of “professional learning” is beginning to change in response to the Internet in general and, more recently, the emergence of social media and online collaboration tools in particular. As noted by Brown and Adler (2008), “Mastering a field of knowledge involves not only ‘learning about’ the subject matter but also ‘learning to be’ a full participant in the field” (p. 19). While this has likely been so in professional fields long before
the rise of the World Wide Web; the potential to instantly and constantly connect with peers dramatically increases the potential for learning and thinking with and through others. The traditional view of professional development for gifted coordinators has been one that has focused on “training delivery,” likely due to the aforementioned isolation of these educators within their employing school systems. Therefore, “learning design” for gifted coordinator professional development has largely been a process of an expert trainer “delivering” professional curriculum he or she created to address a specific topic or issue.

There are several limitations inherent in this traditional design model. Opfer and Pedder (2011) suggest that the design of professional development for educators has been overly reductionist, focusing on teaching discrete skills in isolated settings that do not reflect the complexity of real school environments. What is taught in professional development events often has little or no impact on actual practice. Therefore, Opfer and Pedder argue educators’ learning must be conceptualized as a complex system rather than as an event.

The relevance of the training to people receiving it is limited to the trainer’s or designer’s understanding of the actual needs of training participants. Because the flow of information is “top down,” the quality and currency of information distributed is inherently limited by the expertise of the individual designing the training. Additionally, because one person or a small group of training designers are trying to address the needs of a much larger number of training participants, the degree to which training delivered can be differentiated to meet the individual needs of participants is constrained by the amount of time the trainer has to develop materials. Opportunities to provide one-on-one coaching in this format are often limited to a few minutes of “question and answer” at the end of a formal presentation or webinar.
Finally, Sykes (1996) notes that traditional forms of professional development tend to treat educators as “targets” rather than agents. This is problematic for two reasons: first, because it places educators in passive roles as recipients (rather than creators) of knowledge. Second, it ignores the fact that learning through inquiry, in which professionals seek out and construct knowledge (rather than passively receive it) tends to lead to more powerful learning experiences with clearer connections to practice. The top-down model of professional development which puts learners in the “receiver” role also seems out of step with the fact that gifted coordinators serve in leadership positions where they have to use their knowledge to develop and guide systems. The bias toward narrowly focused professional development in the top-down model has led to a situation in which, according to the Ohio Department of Education, gifted coordinators receive extensive training related to topics like the characteristics of gifted children and appropriate curriculum models, but little or no training or coaching related to actually providing leadership to adults (Ohio Department of Education, 2005). Additionally, the traditional top-down model is limited in meeting needs gifted coordinators may have for social interaction, encouragement, and support from colleagues who understand the highs, lows, and challenges they face in their positions.

One possible response to address some of the limitations of formal professional development may be the creation of “communities of practice” (Wenger, McDermott, & Snyder, 2004), which exist to provide ongoing opportunities for professionals to discuss common issues and concerns, share knowledge, and collaboratively work toward solutions to common problems. Because, in a community of practice, the issues discussed emerge from the community itself, “content” is likely to be highly relevant, and learning results from cognition “situated” in an authentic problem space (Stein, 1998). However, for education specialists like most gifted
coordinators who have no local role peers, the element of ongoing interaction that Wenger, McDermott, and Snyder (2004) cite as being essential to sustaining a community of practice may be difficult to achieve. Connecting with other gifted coordinators has meant finding time and opportunity to travel outside one’s own school district or educational service center.

Because of these limitations, there is growing interest in the potential use of online communities and communication tools to facilitate peer-to-peer support and knowledge sharing among gifted educators. For example, at the time of this writing, there were at least 25 active groups dedicated to discussing gifted education issues on LinkedIn, a social networking platform for professionals. Groups ranged in size from a dozen members to over 1000. Some groups had a clear affiliation with an umbrella organization (e.g., the National Association for Gifted Children), but others appeared to be ad hoc groups organized and moderated by individuals acting on their own. At least 120 individuals have actively contributed to a running discussion of gifted education issues via Twitter using the “#gtchat” hash tag in the last year. An October, 2011 search for gifted education groups on Diigo, a social bookmarking platform which allows users to share and discuss links with other users, found 145 unique groups of people all sharing and discussing gifted education-related web publications and news articles. Still another group of individuals interested in gifted education around the world meets intermittently in Second Life, a virtual world in which members can interact in real time through user-created avatars.

The evidence that some gifted coordinators do, in fact, individually seek out on-demand professional learning and engage in informal peer-to-peer knowledge creation and sharing suggests a need to expand our view of learning design to incorporate community development and facilitation in addition to traditional formal training development and delivery. The fact that technology-savvy gifted coordinators are already using the Web as a medium to engaging in
informal learning and peer-to-peer collaboration suggests an opportunity to enhance gifted coordinators’ expertise and capacity to grapple with complex issues through the use of online tools for communication, networking, and collaboration. However, despite the apparent potential of such platforms to help address challenges inherent in the roles of gifted coordinators, there has been little or no formal research conducted on the degree to which coordinators have adopted these tools for professional purposes or the kinds of information and support coordinators seek and share online. Nor has there been formal research on the factors that motivate gifted coordinators to adopt online tools for professional purposes or the factors that facilitate and inhibit coordinators’ use of online tools and resources for professional learning and problem solving.

Statement of the Problem

According to Ohio Administrative Code 3301-51-15 (Operating Standards for Identifying and Serving Gifted Students, 2008) gifted education coordinators in Ohio are responsible for a wide range of responsibilities, including:

- developing or selecting strategies and assessments for identifying gifted students;
- developing and administering programs and services to address the needs of gifted students;
- coaching classroom teachers on differentiation strategies;
- advising parents;
- conducting program evaluations;
- collecting and analyzing data for a wide variety of stakeholders; and
- developing policy recommendations for administrators and school board members.
Many of these responsibilities involve wrestling with complex, open-ended problems that require advanced knowledge related to the continually evolving fields of gifted education psychology and pedagogy, as well as awareness of a constantly changing web of national, state, and local laws, policies, reform initiatives, and funding systems. Obviously, gifted education coordinators who are well informed about these issues are better positioned to make good leadership choices, provide better advice to local administrators, teachers, and parents, use resources at their disposal more efficiently, and advocate more effectively on behalf of gifted children.

Given the limited opportunities gifted education coordinators have to learn from one another and exchange professional advice in formal and face-to-face settings, gifted education coordinators must use informal channels to get much of the information and advice they need to be effective in their roles. Because opportunities for gifted education coordinators to meet in person are limited by time and distance, a coordinator’s ability to engage in informal learning, sharing, and collaboration using telecommunication tools and online work spaces seems likely to have an impact on the breadth, depth and currency of information they are able to bring to bear in making leadership decisions and policy recommendations.

However, as previously noted, there is an extensive research base on formal professional development programs in general and formal online programs in particular, but relatively little is known about how school leaders such as gifted education coordinators engage in informal learning, the role technology plays in facilitating informal learning and collaboration, or the factors that support or constrain using technology to provide more informed leadership. Therefore, gifted education leaders seeking to develop and foster sustainable and useful online communities of practice currently have to rely on guesswork and “trial and error” processes to
guide their efforts. Research is needed to enable leaders and early technology adopters in gifted education to develop coherent evidence-based strategies for leveraging online tools and resources efficiently and effectively.

Purpose of the Study

The purpose of this study is to explore how gifted education coordinators are (or are not) using online tools and resources to inform leadership decision making and professional problem solving and the factors that influence coordinators’ choices regarding when and how to use online technologies.

Research Questions

This study focuses on three primary research questions:

1. What sources of information and expertise do gifted coordinators access to guide key decisions related to their professional positions?

2. How do gifted education leaders use the Internet (if at all) in accessing information and expertise to inform their practice and decision making?

3. What personal and workplace factors affect the manner and extent to which gifted education leaders use the Internet in their professional practice related to informed leadership and decision making?

Significance of the Study

Professionals in any field where the “state of the art” is continually evolving and in organizations that face ever changing opportunities and challenges must seek out new knowledge, skills, and information in order to serve effectively and have confidence in the choices they make on behalf of their organizations and stakeholders. Formal professional development programs play an important role in keeping professionals such as gifted educators
“current.” However, formal professional development is only a subset of the universe of professional learning. Formal professional development efforts get much attention in schools and from researchers and policy makers, but the reality is that the knowledge and skills professionals learn “on their own” and informally from trusted peers and the information they find “just in time” may have as much, if not more, impact on their thinking and practice (Boud & Middleton, 2003).

As school leaders and reformers continue to explore ways to provide formal professional development more effectively, it is important to look beyond the direct measurable outcomes of those programs in evaluating the ecosystem of professional learning. If it is recognized that education leaders like gifted coordinators have “agency” and sometimes act on their own to learn what they need to know, then attention to formal professional development should be balanced with attention to systems that support leaders’ abilities to efficiently find and filter information and expertise and participate in professional communities of practice.

By studying the types of information that school leaders are pursuing outside of formal training programs, it may be possible to identify topics and issues that formal professional development and pre-service training programs may need to incorporate, and areas where creating or enhancing systems for sharing information easily would be particularly helpful.

By studying the sources of information and expertise that gifted coordinators seek out to help address an authentic problem, resources they trust and find genuinely useful can be identified. Once identified, professional development program developers could incorporate these resources into future formal programs, and school administrators can work to make it easier for coordinators to have access to these resources for ongoing informal learning.
By studying the *means and media* school leaders use to access and share information and expertise, more efficient ways of disseminating new ideas and information can be identified. This includes both making more information accessible through the channels school leaders have chosen on their own as well as developing newer and better channels designed around actual professional needs and practices.

Finally, the study has potential significance in understanding how learning communities can be structured and supported, both by identifying factors that have facilitated participation on the part of early adopters and by identifying barriers to access and participation among others.
CHAPTER II. LITERATURE REVIEW

Professional Practice in Gifted Education Administration

The research base on the professional practice of gifted education teachers is extensive and diverse. Much has also been written on how gifted coordinators may mentor, support, and collaborate with classroom teachers within a district. For example, Landrum’s (2001) “resource consultation model” focuses on collaboration between gifted education specialists and classroom teachers around identifying and creating differentiated curricular resources appropriate for gifted and advanced students.

However, research on the professional practice of gifted program coordinators is remarkably sparse, and focuses almost exclusively on formal professional development. For example, Leppien and Westberg (2006) call for ongoing professional development for district gifted education staff, but focus on coursework and traditional models of in-service training. Rogers (1989) acknowledges differences between the roles of gifted teachers and gifted coordinators, and argues that training programs for coordinators should be more extensive than gifted education training programs for teachers and should focus more on the leadership roles coordinators’ play in school districts, including program design, program evaluation, and strategies for coaching and mentoring others. Again, though, to the extent that gifted coordinators are envisioned in a practitioner community, it is in the role of director or facilitator, but not as co-learners or co-creators.

Nonetheless, despite the lack of research on the professional learning and development of gifted coordinators themselves, scholars in the field have found the presence of knowledgeable, effective gifted coordinators at the district level to be essential to the provision of appropriate learning opportunities for gifted students at the classroom level (VanTassel-Baska, 2006).
However, despite the fact the National Association for Gifted Children’s (NAGC) standards for K-12 gifted education programs specifically recognize the need for ongoing development opportunities for classroom teachers and explicitly call for dedicated collaborative planning time for teachers, opportunities for ongoing learning for gifted coordinators is not addressed. For the most part, the standards frame coordinators as sources of professional knowledge and providers of expertise, but do not address coordinators as learners beyond language related to training they should receive prior to taking the coordinator role. While the NAGC standards do call for gifted coordinators to develop ongoing relationships with gifted education advocacy groups and compliance agencies and to work collaboratively with parents and stakeholders within their own school systems, they do not address opportunities for coordinators to network and collaborate with role peers in other districts.

The Internet and Informed Decision Making

According to Herbert Simon (1997), a leader’s capacity to make informed decisions is limited by what he terms “bounded rationality.” In any decision-making scenario, a leader can only choose from among the choices of which he or she is aware. In theory, the more alternatives a leader can consider, and the more information that can be used to evaluate each alternative, the greater the possibility of a leader making an optimal choice.

In a 2006 paper drawing on data from the Pew Trust’s longitudinal study on “The Internet and American Life,” Boase, Horrigan, Wellman, and Rainie report that Americans’ use of Internet-based communication tools such as email and social networking sites is not limited to socializing and maintaining personal relationships. Most users of these tools report using them to help accomplish specific tasks, connecting with others to “seek information, exchange advice, and make decisions.”
In another study for the Pew Trust, researchers asked survey participants to think of one specific problem they had grappled with recently. Then, participants were asked to indicate the resources to which they turned to help with that problem. Among survey responders, 58% indicated that they had turned to the Internet. This percentage topped the percentages of participants who said they sought help from a professional (53%), a friend or family member (51%), or went to the library (13%) (Rainie, Estabrook, & Witt, 2007).

Other studies have found that many teachers are using their online networks in ways similar to those described in the Pew studies to accomplish tasks and solve problems specific to their professional roles. For example, Rutherford (2010) performed a content analysis of postings to a Facebook group organized by a group of teachers in Ontario, and found that members were using the group to seek both content and pedagogical knowledge, to share teaching resources, to discuss student issues, and even to find employment opportunities.

Administrators also often seem to rely on personal networks to guide decision-making, and in many cases give greater weight to opinions and anecdotal data shared by people they know than to formal evaluation reports and academic research. Fusarelli (2008) suggests that trust in the source of information is an important factor in the degree to which it influences school leaders’ decisions. Often, when research findings conflict with administrators’ gut instincts, personal experiences, or the opinions of people they know, they react by questioning the motives of the researchers or focusing on differences between the current context of their schools and the context in which the study took place.

Unfortunately, no studies were found that examined whether gifted coordinators’ used the Internet to guide choices and solve problems in similar ways. Nonetheless, the existence of websites, wikis, Facebook pages, Twitter hashtags, and social bookmarking groups related to
gifted education provides strong anecdotal evidence that many gifted educators are attempting to use the Internet as a resource for informing choices and solving problems.

Communities of Practice

A theoretical lens that will be applied to the evaluation of data collected for this study will be Lave and Wenger’s (1991) “communities of practice” model. Communities of practice may be defined as “groups of people who share a concern, a set of problems, or a passion about a topic, and who deepen their knowledge and expertise in this area by interacting on an ongoing basis” (Wenger, McDermott & Snyder, 2002, p. 4). Communities may or may not be comprised of people who work together on a daily basis. However, regular and ongoing interaction is seen as a key characteristic of “community.”

Interactions of communities of practice focus on sharing information, advice, and insight. Members of communities of practice also discuss common issues and help one another think about and solve problems. Many communities of practice collaboratively create resources (such as shared information repositories, “how-to” manuals, and best practices resources) related to shared practices. However, Wenger, McDermott, and Snyder (2002) also note that opportunities for informal sharing of “tacit knowledge” is a major source of value of participation in communities of practice.

Some communities of practice, such as professional associations, are formally organized groups with names, governance structures, explicit mission statements, and so forth, not unlike a geographically defined community such as a city or town. However, some communities of practice are “ad hoc” networks without formalized organization structures or membership rosters that emerge organically. Wegner, McDermott, and Snyer (2002) note that communities of practice are often not limited by organizational boundaries.
Because communities of practice may or may not exist within formal structures, Snyder, Wenger, McDermott, and Snyder (2002) use a criterion-based model for identifying communities of practice. In their view, a community of practice has three key elements:

- a domain of knowledge that defines the issues around which the community is organized;
- a group of people who care about that domain of knowledge; and,
- a shared practice which each member is seeking to improve. The domain denotes the topic or issue the around which the community is organized, while the authors define “practice” as “a set of frameworks, ideas, tools, information, styles, language, stories, and documents that community members share.”

In this study, all participants have a common domain of knowledge (gifted education) about which they care, and at least some shared “practices” given that some responsibilities of gifted coordinators are prescribed in state administrative rules. What is not yet known is the extent to which gifted coordinators are “practicing” in isolation or as members of communities. Therefore, seeing whether there are indeed resources, tools, frameworks, vocabulary, and stories that recur across cases in this study should be illuminating.

Wenger, McDermott, and Snyder (2002) also note that an important function of communities of practice is the sharing of “tacit” knowledge and transmission of domain culture. This may occur in at least two ways: through various forms of conversation between community members (where knowledge and culture are shared among participants but not documented), and through the collaborative and deliberate creation of new tools and resources that make previously tacit knowledge explicit through the creation of artifacts (such as publications) or gets embedded in tools (such as program models, evaluation frameworks, etc.) The interview protocol described in the research methods chapter of this proposal is in part designed to discover whether the
organizations and networks in which gifted coordinators are involved perform this function and, if so, whether this leads gifted coordinators to see themselves as members of a community of gifted education practitioners despite often being geographically and organizationally isolated from one another.

Online Communities of Practice

As options for communicating via the Internet have proliferated and as online tools for working collaboratively have emerged, interest has grown among leaders and scholars (e.g. Schlager & Fusco, 2004) in using the Web as a medium for both creating new “virtual communities of practice” and as a medium for catalyzing existing communities of practice in which at least some shared activities take place in the physical world.

In contrast to traditional communities of practice that depend to a large extent on face-to-face interaction, online communities do not exist in a physical space. Therefore, they are less likely to be limited by geography. Additionally, they are often more fluid than traditional communities in terms of membership with participants coming and going as they please, and the availability of “asynchronous” tools creates greater flexibility and potentially more opportunities for interaction because conversation and collaboration no longer depend on members to be in the same place at the same time.

However, because the tools needed to form a community are now widely available (often at no direct cost to users), online communities of practice can be started and nurtured by individuals as well as organizations. Any individual with the necessary skills and motivation can set up an online community that can scale to a significant size under the right conditions. Because they often have a less formal structure, virtual communities also tend to be more fluid than traditional communities, and may spring up quickly around a specific cause or purpose and
then fade out almost as quickly (Johnson, 2001). Within the lifecycle of a virtual community not built around a formal organizational entity, individual members may also come and go as they please. Therefore, ongoing participation in the community by individual members is thought to be dependent on the degree to which the community serves an ongoing personal need or interest.

In part due to their less formal organizational structures, online communities seem to lend themselves to informal learning, which may be defined as learning that takes place outside of a formal education or training structure. Whereas, in formal learning, “content” is structured by an instructor or designer, the exploration of ideas and information is directed by the learner him or herself or negotiated with others with whom the learner is collaborating (Marsick & Watkins, 2001). Additionally, these informal learning communities provide opportunities for people to fulfill social and emotional needs related to their professional practice. For example, in a study of an online community of practice for teachers, Hur (2007) found that, in addition to seeking opportunities to share resources and information, teachers were motivated to join and participate out of a desire for a forum in which they could share emotions, seek advice, experience professional camaraderie, and combat teacher isolation.

Personal Learning Networks

Online tools offer the potential to make individuals less dependent on institutions to provide the infrastructure needed to communicate and collaborate with others with overlapping goals and interests. Social networking tools in particular seem to be having a disruptive influence on professional learning. As Stephen Downes (2006) has noted, prior to the emergence of online social networking tools, online content (especially within online learning systems) tended to be organized hierarchically in “folders” and “threads.” Because of this, to the extent that online learning communities existed, they tended to be organized around individual
sites, and whoever created and maintained a particular site largely dictated its organizational structure and therefore how others could interact with content on the site. (In many ways, this was not unlike learning communities centered around formal organizations in the physical world.) Social networking and social bookmarking tools, however, make it possible for each person to organize resources for himself or herself by bookmarking, clipping, and tagging online content according to their own preferences, and enable people to find and connect with *individuals* with whom they share goals and interests on their own.

However, as this decentralization has created new opportunities for people to find resources and collaborators related to their interests, it has also created new challenges for learners participating in multiple, partially overlapping communities. Previously, determining how to curate and organize resources and the flow of information was the responsibility of whoever designed and maintained the centralized structure. However, in a structure where each learner is the center of his or her own learning network, responsibility for organizing resources and information devolves from a designer to the learner himself or herself.

As a response to the opportunities and challenges posed by this reorganization of learning networks to revolve around the individual rather than the organization, the concept of personal learning *environments* (PLEs) has emerged as a companion to the concept of personal learning networks. A personal learning environment can be thought of as the interface between a learner and the online elements of his or her personal learning network, which allows the individual to filter, organize, and make sense of information and conversation flowing from many sources and participate as a member of multiple, sometimes overlapping, online communities. However, most authors discussing the PLE concept do not view a PLE as a single software application (Fiedler & Valjataga, 2010), but as a collection of tools selected by a learner.
to stay on top of information, discussion, and activity in networks of interest (Wilson, 2008). In other words, a PLE is not so much a tool as it is the toolbox.

As the PLE concept is relatively new, it was not expected that many (if any) participants in the proposed study would use the PLE terminology to describe the universe of online tools they have adopted for professional learning and decision-making. However, the PLE concept still serves as a useful model for interpreting results from the survey described in the methods chapter and for connecting the survey results with data collected in the interview process from case study participants. This is because individual survey items focus on perceptions and use of specific technology tools, whereas the PLE concept reminds us that, in practice, most people use tools in combination, and that a gifted coordinator’s beliefs and practices relative to the adoption of one tool or resource may be influenced by the strengths and limitations of other tools in his or her proverbial toolbox.

Connectivism and Personal Learning Networks

It is important to note that the word “practice” in “professional practice” connotes not just “knowing,” but acting. While not all communities of practice are tied together by shared membership in a particular organization, under Wenger’s definition, they are all characterized by a shared desire to share and learn from experiences. George Siemens (2004), in his first major paper introducing his theory of connectivism, quotes Karen Stephenson, who stated, “Experience has long been considered the best teacher of knowledge. Since we cannot experience everything, other people’s experiences, and hence other people, become the surrogate for knowledge. ‘I store my knowledge in my friends’ is an axiom for collecting knowledge through collecting people.” Siemens goes on to argue that “learning” and “understanding” are fundamentally processes of forming connections between and among people and ideas, and that, in the Internet era, the
cultivation of networks to facilitate this process should play a central role in thinking about new models of education, training, and professional development.

Boud and Middleton (2003), in an analysis of interview data collected in a variety of workplaces, including a school, found that informal learning helped address needs such as “mastery of organizational processes,” “negotiating the political,” and, “dealing with the atypical.” It is perhaps not surprising that informal professional learning would deal with these issues since they address kinds of critical know-how that are unlikely to be addressed in formal training, particularly in pre-service educator preparation. It is also worth noting that these three foci of informal learning focus on issues that are context specific and situational – areas where there may not be general principles or well-established theoretical models to inform choices and actions. This finding also suggests that informal learning within communities of practice may play a role in surfaced “promising” practices as members look for patterns in past experiences of others to help guide them in dealing with a current need or issue. Thus, the activity of the community contributes not only to the transmission of existing (albeit often tacit) knowledge and culture, but also to the genesis of new theories, models, and understandings and the evolution of domains and the cultures that surround them. This reinforces another argument put forward by Siemens (2004) who suggests that decision-making is itself a learning process and notes that, “while there is a right answer now, it may be wrong tomorrow due to alterations in the information climate affecting the decision” (para. 25). (In the present study, the researcher is interested in whether there is a tendency on the part of participants to turn to people in their personal learning networks for guidance rather than static, non-interactive resources like books and research publications for help dealing with issues where they suspect there is no universally, permanently “right” answer or approach.)
Technology Adoption Factors

Whether or not a leader leverages his or her online personal learning environment to think through an issue or problem was hypothesized to be influenced by the leader’s perceptions of the nature of that issue or problem based on the literature previously discussed, his or her beliefs about whether or not doing so will be productive, his or her sense of self-efficacy related to technology, and his or her actual technological skill set.

This prediction was partly based on Staub’s (2007) synthesis of models predicting technology adoption. Staub asserts that facilitating technology adoption in informal learning requires addressing, “cognitive, emotional, and contextual concerns.” Similar factors have been identified by other researchers exploring questions related to technology adoption in education. Rogers (1995) found the adoption of new technologies on the part of educators was influenced by the degree to which the anticipated benefits of using a tool outweighed the perceived effort required to master it, the degree to which an individual teacher feels peer pressure and support for using it, and the degree to which a teacher feels that his or her use of the technology is supported and encouraged by school leaders. Agrawal (2000) reported that personal experience using technology and beliefs about one’s own competence related to using technology also influenced use of technology tools in professional practice. For example, individuals who have gained expertise with creating websites related to their hobbies or participated in online communities recreationally outside of school are more eager to adopt similar tools in their professional practices and are more likely to be willing to take risks and experiment with new tools.

Whereas Staub focused on how to influence and encourage technology adoption, this study focuses on whether and how participants incorporate technology in leadership decision-
making while not presupposing that increasing the role of technology in this process is necessarily desirable. Nonetheless, Staub’s work is uniquely relevant to this study, given that it approaches understanding how to facilitate technology adoption by looking at what factors lead to people adopting technologies on their own in order to understand how to deliberately create conditions conducive to people incorporating selected technologies into their professional practice. Staub notes the dearth of naturalistic research in this area, with the vast majority of studies focusing on the uptake and success of particular tools in particular contexts. He concludes by arguing that, in the future, adoption research should focus not just on adoption and implementation of information technology within formal organization, but how individuals understand, adopt, and learn technology in informal settings where they often have greater leeway to decide for themselves which tools to use and how to use them. It is hoped that this study will help fill this gap and begin to address unanswered questions about the interaction between formal and informal learning in the professional practice of individual educators as leaders and technology users.
CHAPTER III. RESEARCH METHODS

Research Design

Based on the assumption that coordinators primarily seek out informal learning opportunities in response to specific professional needs, this research was approached through multiple case studies in which each “case” was a description of how a gifted education coordinator who has recently grappled with a complex leadership choice or policy decision sought out knowledge and advice to inform his or her thinking. In particular, the case studies examine what, if any, role technology and media played in that process.

This study incorporates both quantitative and qualitative data collection strategies, beginning with a survey designed to measure coordinator’s attitudes about technology, technology self-efficacy, and familiarity with and use of popular Internet-based tools designed to facilitate finding, sharing, and co-creating information. Survey data was then used to select six gifted coordinators to participate in case studies. One of the six invitees withdrew from the study due to a family issue, resulting in a total of five case study participants. Case study participants were chosen for two quintains (Stake, 2006): one comprised of participants who reported levels of technology use higher than the survey mean in their professional roles, and one comprised of participants who reported low levels of technology use in their professional roles compared to other survey participants.

Case study participants participated in a “mapping” exercise designed to create a visual depiction of the sources of expertise they accessed in informing their thinking about a high stakes decision or policy recommendation. In addition to mapping information sources, the diagrams created also captured data about the channels used to access those sources to illuminate the roles of technology in the process. Semi-structured one-on-one interviews were also
conducted with each case study participant. The interview questions provided opportunities for participants to elaborate on their maps and to discuss personal, technological, and workplace factors that influenced the role technology played in their decision or policy making processes. The survey data, maps, and interview responses were then used to generate descriptions of each case and to support a cross-case analysis resulting in descriptions of each quintain.

For this study, it was assumed that the choices people make regarding the tools appropriate for a particular task or problem are at least in part contingent on the nature of the task or problem itself. For example, a coordinator attempting to address a complex issue related to meeting the needs of one particular student may turn to one set of resources but then use a completely different set of resources when working to provide leadership on district-level policy development. A narrow, naturalistic approach focusing on an actual local issue was taken within the case studies rather than asking participants to talk about what resources they might access if faced with a hypothetical issue.

The survey data collected, which explore technology use and know-how “in general,” complement the closer investigation of technology use around a single task or problem. For instance, one would expect that a gifted coordinator who reports high levels of technology use and self-confidence in his or her technology skills on the survey would also describe a significant use of technology in the interview process. Thus, if a discrepancy is noted where either a coordinator reports low technology use and self-efficacy on the survey but extensive use of technology with the real-world problem or a coordinator who reports being a heavy user of technology in general but minimal use of technology with the real-world problem, it provides a useful opportunity to explore how personal factors and situational factors interact in influencing whether and how technology is used.
Participants

Survey participants were recruited at meetings of two regional gifted coordinator organizations affiliated with a state association for gifted educators and gifted education advocates. One regional organization is comprised of coordinators primarily serving large urban and suburban schools. The other is comprised primarily of coordinators serving small cities and rural schools. While this approach does not provide a true random sample of all gifted coordinators in the state, it does provide access to a potential sample that includes coordinators serving the full range of school district types in terms of size and community demographics.

Meetings of these regional gifted coordinator organizations typically have between 20 and 40 attendees. Because the current Presidents of these organizations pledged to provide time during a regular scheduled meeting to administer the survey, a high percentage of members of these groups consented to participate in at least the survey portion of the study, resulting in a total of 36 participants.

From the pool of participants completing surveys and indicating a willingness to participate in follow-up interviews, six participants were selected for involvement based on patterns of responses to the survey, one of whom later withdrew. Half of the cases selected were survey participants who indicated high levels of technology use and self-efficacy compared to the sample as a whole. The others were survey participants who indicated low levels of technology use and self-efficacy compared to the sample as a whole. Five of the six survey participants invited to interviews ultimately completed interviews.

Data Collection Instruments

Survey of Gifted Coordinators
The survey administered was a modified version of the Teacher Technology Integration Survey (TTIS), originally developed by Vannatta and Banister (2009). According to the authors, the TTIS was designed to around a multi-faceted concept of technology integration. The instrument consists of eleven subscales designed around six issues that are well established in the research literature as contributors to teacher technology integration, including:

- Risk-taking behaviors and comfort with technology;
- Perceived benefits of using technology in the classroom;
- Beliefs and behaviors about classroom technology use;
- Teacher support for technology use and access to technology;
- Teacher technology use; and
- Facilitation of student technology use.

The original survey was piloted with 267 participating teachers, who completed the instrument online. Vannatta and Banister report that 76% of respondents were female, and that participants were roughly equally distributed across elementary, middle school, and high school levels.

Through an exploratory factor analysis, the researchers identified eight strong factors, which they labeled: risk-taking; benefits; beliefs and behaviors; support; teacher instruction and instructional support uses; teacher communication uses; student general use; and student use of specific software tools. The authors then reviewed response data for each item and removed items that did not strongly contribute to factor reliability to increase internal reliability of each subscale and to reduce the overall length of the instrument.

The TTIS was selected for this study because its theoretical underpinnings are well supported by other research. Additionally, it was developed and validated using a sample of Ohio
educators, so cultural and contextual issues are unlikely to be an issue in the present study because the participants in both studies come from similar backgrounds and work in similar environments. Finally, using the TTIS for this study creates the potential for evaluating whether there are significant differences in beliefs and practices related to technology between gifted coordinators and classroom teachers working in similar professional environments.

*Adaptation of the TTIS for Gifted Coordinators*

Because some elements of the TTIS focused specifically on technology use within the classroom, some modifications were necessary because gifted coordinator positions are typically exclusively or primarily administrative positions. In the process of adapting the revised TTIS for use with gifted education coordinators, TTIS items were reviewed for relevance to the typical responsibilities of gifted coordinators. Items that focused specifically on in-classroom applications of technology were omitted.

Second, examples provided in the TTIS to explicate items on the survey were reviewed to ensure they remained current given the rapid cycle of creation, adoption, and abandonment of tools used to communicate online and create and interact with Web-based media. Where needed, item examples were updated. For instance, one item on the original TTIS asked participants to self-assess their ability to “use a web authoring tool (e.g., Netscape Composer, FrontPage) to create basic web pages w/text & images.” FrontPage, a Microsoft product, owed much of its popularity among educators to the fact that it bundled with many versions of the ubiquitous Microsoft Office suite from 1997 to 2003. However, the application has not been included in more recent versions of Office, and the product is no longer under active development. Thus, its use is increasingly uncommon. Netscape no longer exists as a software vendor, although Composer is still available (sans Netscape branding) as a package from Mozilla, the open-source
organization that inherited many of Netscape’s technologies after AOL purchased and then closed down the software maker. Therefore, while familiarity with “web authoring tools” is still a relevant issue, the examples have been changed, omitting FrontPage and Composer and adding WordPress, Wikispaces, and PBWorks, which currently lead the field of teacher-friendly web page editors.

Similarly, Google Chrome was added to the list of examples of web browsers used with one item, and Bing was added to the list of examples of search engines on another. Elsewhere, examples were added to an item that asked about educator’s use of handheld devices to organize information. The original version listed “Palm Pilot” as the sole example. In the revised version, the examples given for the same item included “PDA, smart phone or tablet device,” reflecting the demise of Palm as a brand, the recent proliferation of iOS and Android-based smartphones and tablets, and the enduring niche the iPod Touch has found in school settings. In all cases, however, the revised examples were selected to remain true to the original concepts assessed in the earlier TTIS. Changed examples were shared with two higher education faculty members with educational technology expertise and knowledge of the evolution of technology since 2007 when the TTIS was originally drafted. Both faculty members concurred that the example changes were appropriate and consistent with the focus of the original items.

Additionally, a small number of items were added at the end of the survey that addressed which types of technology survey participants were using at home. The researcher suspects that some educators may gain relatively high levels of fluency using software with educational applications outside their formal roles, and that this often occurs away from school and sometimes on the educators’ personal devices. While blog communities, Twitter groups, and networks of educators on Facebook still struggle to gain formal blessing from administrators in
many districts, it is known that some gifted specialists are connecting with each other on Twitter and Facebook, getting and giving advice on online discussion boards and mail lists, and using some of these tools to work with teachers and students and stay in touch with parents, at least on an “unofficial,” ad hoc basis. Given the focus of the study, gathering some data about how coordinators are using technology tools not directly provided or officially sanctioned by their employers is important, particularly related to understanding the role of technology in informal learning and mentoring, seemed useful.

Based on feedback from the dissertation chair and from gifted education coordinators who participated in a pilot review of the survey, a set of open-ended items was also added which ask participants to indicate what role if any technology plays in how they access information and expertise used to perform job duties common to gifted education coordinators. The duties included on the survey were drawn from the list of duties Ohio Administrative Code Section 3301-51-15 states that gifted coordinators “shall perform.”

Finally, a new section was added at the end of the instrument to collect personal contact and demographic information. This was necessary because a primary use of the survey in this study was to select individuals to participate in follow-up structured interviews. Items in this section request participant names, contact information, and information regarding years of experience in participants’ current jobs and as gifted coordinators overall. This section also includes an item asking participants to indicate their willingness to participate in a follow-up interview if selected. This item was helpful in selecting case study participants and in avoiding unnecessary follow-up contacts with participants who did not wish to be involved in the study beyond completing the initial survey.

*Drawing Exercise and Structured Interview Protocol*
After surveys were administered and responses were entered into a database for evaluation, participants were recruited to participate in structured interviews based around a mapping exercise. Purposeful sampling (Creswell, 2008) was be used in this process. Specifically, the researcher identified three participants who scored significantly above the mean of the group as a whole on items related to personal factors, perceived value of technology in education, and personal experience using technology tools. The researcher also identified three participants who scored significantly below the mean of the group as a whole on these subscales, one of whom withdrew from the study for personal reasons.

The interviews using the drawing task were conducted on a one-on-one, face-to-face basis at locations selected by the participants. Each participant was given a large sheet of drawing paper. The following script was read orally to participants one item at a time during the meetings:

1. “Think of a major project you have led or helped lead in your role as a gifted coordinator in the last three years (e.g., developing a new policy, creating a new service option, revising a service model, conducting a major program evaluation, etc.) that required you to conduct or review research or seek expert advice or stakeholder input. Give this project a name and write it at the center of your drawing paper.” (Researcher’s note: the purpose of focusing participants on a project within the last three years is, first, to help ensure that reflections are based on relatively “fresh” memories and, second, to help control for the fact that technology is rapidly evolving and participation in online networks has grown dramatically in that time period. Therefore, allowing participants to select examples from long ago would increase the risk that their use of technology in the process they described would reflect the existence and availability of technology at the
time of the project more than a participant’s actual beliefs and experiences related to technology.)

2. “Next, try to remember each resource you tapped to help guide your decision or recommendation. ‘Resources’ may include publications, people, data and more. Write and circle each resource a few inches from the edge of your drawing paper.”

3. “Outside each resource circle (along the edge of your paper), indicate how you first heard of or learned about this resource.”

4. “Then, use a marker to draw a line from each resource to the project you wrote at the center of your paper. Line thickness will indicate how important a role each resource played in informing your decision or recommendation. Use the thick marker to connect the center of your drawing to the resources that most informed your decision or recommendation. Use the fine line marker to connect the center of your drawing to the resources that played a minor role in informing your decision or recommendation.”

5. “Next, along each line you drew, indicate the media or channel(s) you used to connect with or access each resource you listed (for example, ‘face to face,’ ‘by telephone,’ ‘email,’ etc.).”

6. “If you accessed any one resource using more than one medium or channel, rank those media or channels in order of importance for enabling your use of this resource. Rank the most important medium or channel ‘1,’ the second most important medium or channel ‘2,’ and so on.)”

As an explanatory example, if needed, a series of drawings representing how a person might gather information to inform a decision about which car to purchase were provided.

*Interview Protocol*
Immediately after the drawing exercise was completed, participants were asked to participate in a structured interview (Creswell, 2008). Interview questions (see Appendix C) focused on explicating the completed drawing, asking participants to explain their choices of communication channels for accessing sources of information and expertise, and describe how they first became aware of those resources. Interviewees were also guided to reflect on whether or not they saw themselves as members of communities of practice related to gifted education. Participants were asked to describe their Internet usage habits, including how much time they spent online interacting with resources relevant to their professional roles. Finally, participants were asked to share their own thoughts on the role of the Internet in performing their leadership roles and responsibilities and in their informal professional learning.

Data Analysis Procedures

Survey Data Analysis

As noted previously, data collected through the survey served two main purposes in this study. First, it was used to help purposefully select technology “outliers” among gifted coordinators. Second, the responses of the coordinators selected as case study participants were used as data sources for the case and quintain descriptions, complementing the qualitative data to be gathered through the structured interviews.

A subscore for each section adapted from the TTIS was calculated for each participant. Each item in the first section of the instrument, which is comprised of questions asking participants to rate their skill levels using a variety of online tools and software applications, offers four response options: “I can’t do this,” “I can do this with some assistance,” “I can do this independently,” and, “I can teach others to do this.” Responses on these items were converted to a four-point scale, where “I can’t do this” is assigned a numerical value of one and, “I can teach
others to do this” is assigned a numerical value of four. A participant’s subscore on this section were calculated by averaging these converted values. Any items left blank were treated as null values in this calculation.

The second, third, and fourth sections of the instrument are comprised of Likert-type items which ask participants to rate their level of agreement with a series of statements, with the second section focusing on comfort level using technology, the third section focusing on participants’ perceptions of the benefits of technology, and the fourth section focusing on perceived levels of support for technology use in the participants’ school. For each of these sections, responses were converted to four-point scales where responses of “strongly disagree” are assigned a numeric value of one and responses of “strongly agree” assigned a numeric value of four. Subscores were calculated for each of these sections by averaging the numeric value of all of a participant’s responses for that particular section. As with the first section, any items left blank were treated as null values in the subscore calculation.

The fifth, sixth, and seventh sections of the survey ask participants to indicate how frequently they use technology to perform a variety of specific tasks. Participants are offered as response options, “never,” “once or twice in a semester,” “several times in a semester,” “several times in a month,” and, “several times in a week.” For these sections, responses of “never” were assigned zero as a numeric value, responses of “once or twice in a semester” were assigned one as a numeric value, and responses of “several times in a week” were assigned four points. Another subscore was calculated by averaging participants’ responses on these three survey sections.

Means and standard deviations for each of the derived subscores were calculated across the sample. The researcher then reviewed the spreadsheet and attempted to identify and recruit
for case studies participants one trio of participants with subscores at least one standard deviation below the mean on all sections, and a second group of participants with subscores at least one standard deviation above the mean on all sections.

Interview Data Analysis

Connectivism, a network-focused “learning theory for the digital age” (Siemens, 2004) developed by George Siemens and Stephen Downes, influenced the design of the interview protocol, and was used as a theoretical lens to guide analysis of the drawings created during the interview process. Specifically, it drew on the descriptive elements of learning networks described as defined by Downes (Downes, 2006), who identifies three elements of networks: “entities,” which he defines as, “the things that are connected that send and receive signal,” “connections,” which are defined as the links or channels between entities, and “signals,” which are the messages sent between entities via connections.

Downes states that networks may vary according to a certain set of properties, including:

- “density,” which is how many other entities each entity is connected to;
- “speed,” which describes how quickly a message can move across the network;
- “flow,” which is how much information an entity receives and passes along to other entities;
- “plasticity,” which is how frequently connections are created or abandoned; and,
- overall “degree of connectedness,” which is a combined function of all of these properties.

Cross Case Comparisons

Descriptive cases drawing primarily on the structured interview data were crafted using Downes’ network characteristics as an organizational framework. Downes’ (2006) model
focuses on the structure of networks and the flow of information within them. It does not specifically address the kinds of information in the network, which Staub (2007) convincingly argues is an important element in understanding how people use tools in informal learning. Therefore, a second pass through the interview data focused on the types of problems that gifted coordinators described trying to address, and the kinds of information they sought from each entity identified on their network drawings. Once a basic case description was constructed for each interview participant, the researcher looked for common patterns and themes among the cases within each quintain. Finally, the quintains will were compared and contrasted to one another with the ultimate goal being to distill characteristics of the approaches to information seeking in decision-making between participants reporting “low tech” versus “high tech” usage and the technology skills and attitudes that are associated with each quintain.

*Anticipated Ethical Issues*

As noted in Appendix B, because no “treatment” was administered in connection with this study, potential risks to participants were believed to be minimal and similar to those related to participation in other kinds of survey research. The most significant risks posed to participants were thought to be the potential disclosure of responses that may negatively affect others’ perceptions of their competence related to technology skills and potential disclosure of responses that would not be well received by upper level district administrators (e.g. on items that ask participants to rate the degree to which their school district has a clear vision for technology use and the degree of perceived support for mastering and incorporating technology.)

Several steps were taken to limit the potential for harm to participants. First, prior to being asked to complete the surveys, potential participants were informed of the risks described above and reminded that their participation was strictly voluntary, and that they may withdraw
from participation at any time or decide not to respond to any particular item on the survey without penalty. Participants were also given an opportunity to ask questions about the purpose of the study and the research process before being asked to sign a form indicating their informed consent to participate.

The researcher also took steps to help ensure that participants’ responses were kept confidential. These included storing all written documents related to the study in a locked file in a private location, storing electronic data in password-protected files on a computer protected by an industry standard firewall, using pseudonyms in lieu of participants’ real names in the case descriptions, and destroying records with individually identifiable information at the completion of the study.

It is also possible that the researcher’s own assumptions and perceptions may influence the interpretation of qualitative data used in the study. To help minimize potential perceptual bias, each interview participant was asked to review and comment on the draft of his or her case report. Additionally, summary data and draft case and quintain descriptions were shared with colleagues serving as “critical friends” (Creswell, 2008) to the researcher on the lookout for conclusions not well supported by study data.
CHAPTER IV. RESULTS

Descriptive Results

Sample Description

A total of 36 volunteers recruited at meetings of two regional gifted coordinator groups completed the adapted TTIS survey form (Appendix B). Six attendees at these meetings declined to participate in the survey to leave the meetings early, resulting in a total response rate of 85%. Upon reviewing the completed surveys, the researcher discovered that one volunteer indicated in a note on the form that she did not serve in a gifted education role but was attending the regional meeting as a substitute to bring information back to her district. Because the target population of the study is gifted education coordinators in Ohio, her responses were set aside and not included in the data reported below. Therefore, the total sample size of the sample was 35.

Participant Demographics

Demographic items on the survey asked participants to report their genders, years of service as a gifted coordinator in their current districts or educational service centers, total years of service as gifted coordinators throughout their careers, and total years of service as a professional educator. Participants were also asked to classify the district(s) they served as “mostly urban,” “mostly suburban,” ”mostly rural,” or “a combination of district types” (an option needed given the fact that some gifted coordinators employed by educational service centers serve multiple school districts).

Sixteen of the 35 participants reported serving a “mostly suburban” school district. Seven reported serving a “mostly rural” district, six reported serving “mostly urban” districts, and six reported serving a combination of different district types. This distribution is in line with the researcher’s expectations given the state’s demographics and the fact that one region included
two major urban districts and the other region had one major urban district (each surrounded by numerous suburbs), and the fact that small rural districts are more likely to be served by a gifted coordinator employed by an educational service center serving multiple districts. (It should be noted that, in Figure 1, it may appear that rural and urban districts are underrepresented and suburban districts are overrepresented in the sample. However, because each count in the table reflects a gifted coordinator, and not a district, this is not the case because most of the coordinators in rural areas served multiple school districts. Additionally, while there were fewer coordinators serving urban districts than suburban districts in the sample, urban representation in the sample is more than proportionate. The Ohio Department of Education classifies 339 of the state’s school district as rural, 256 as suburban or smaller urban districts, and 15 as major urban districts (Ohio Department of Education, 2007). Together, the 35 participants coordinated gifted education services for 74 school districts (12% of all school districts in the state). Only four of the 35 participants were male.
Overall, the sample was comprised of highly experienced educators. Again, this is not surprising given the state’s qualification requirements for gifted coordinators. Coordinators are required to hold a gifted intervention specialist license or endorsement (which is usually earned after earning an initial teaching license) and an administrative license if they will be supervising teachers (as the majority of gifted coordinators do). Earning an administrative license requires the completion of a licensure program and three years of successful classroom experience. Therefore, most gifted coordinators enter their positions several years into their education careers. While the study was not designed to focus on age cohort differences in technology skills, use, or self-efficacy, it may be interesting to note that there was a statistically significant negative relationship ($r = 0.50$) between participants’ years of educational experience and their subscores on the “skills” section of the survey. However, there were clear exceptions to the overall pattern. For example, the participant with the second longest education career tied for the highest subscore on the technology skills section of the TTIS.
Table 1

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<tbody>
<tr>
<td>Years of service in current position</td>
<td>6.0</td>
<td>3.5</td>
<td>1</td>
<td>13</td>
</tr>
<tr>
<td>Total years of service as a gifted coordinator</td>
<td>8.7</td>
<td>6.0</td>
<td>1</td>
<td>35</td>
</tr>
<tr>
<td>Total years of education experience</td>
<td>22.9</td>
<td>10.3</td>
<td>6.0</td>
<td>42.0</td>
</tr>
</tbody>
</table>

Coordinator Technology Skills

Twenty-one survey items asked gifted coordinators to rate their skill levels using a number of software applications and online tools frequently used in school settings. For each item, participants were asked to rate themselves on a 4-point scale where a response of 1 indicated “I can’t do this,” 2 indicated “I can do this with some assistance,” 3 indicated “I can do this on my own,” and 4 indicated, “I can teach others to do this.” Participants’ ratings on these items were averaged to determine a technology skills subscore for each coordinator. Additionally, ratings for all participants on each item were averaged to provide insight into the skill level of participants as a group and to provide a comparison figure for the individual case studies. Table 2 describes mean scores and standard deviations for each of these items.
Table 2

Technology Skills Item Ratings

<table>
<thead>
<tr>
<th>Item</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Create, save, copy and delete files; move or copy files; create folders and move files between folders</td>
<td>3.71</td>
<td>0.57</td>
</tr>
<tr>
<td>2. Print an entire document, selected pages, and/or current page within a document</td>
<td>3.83</td>
<td>0.38</td>
</tr>
<tr>
<td>3. Cut, paste and copy information within and between documents</td>
<td>3.77</td>
<td>0.55</td>
</tr>
<tr>
<td>4. Troubleshooting: When my computer freezes or an error message comes up, I can usually fix the problem.</td>
<td>2.56</td>
<td>0.89</td>
</tr>
<tr>
<td>5. Troubleshooting: I know the things to check if my computer doesn't turn on.</td>
<td>2.91</td>
<td>0.87</td>
</tr>
<tr>
<td>6. Viruses: I can use anti-virus software to check my machine for viruses.</td>
<td>2.74</td>
<td>0.98</td>
</tr>
<tr>
<td>7. Word processors: Use word processor functions to format text (colors and styles), check spelling and grammar</td>
<td>3.86</td>
<td>0.36</td>
</tr>
<tr>
<td>8. Word processors: Use advanced features of word processor (headers/footers, tables, insert pictures)</td>
<td>3.51</td>
<td>0.78</td>
</tr>
<tr>
<td>9. Spreadsheets: Use the basic functions of a spreadsheet to create column headings and enter data</td>
<td>3.43</td>
<td>0.85</td>
</tr>
<tr>
<td>10. Spreadsheets: Use advanced features of a spreadsheet (e.g. use formulas, sort data, charts/graphs)</td>
<td>2.77</td>
<td>1.06</td>
</tr>
<tr>
<td>11. Presentation: Create a presentation using predefined templates</td>
<td>3.34</td>
<td>0.80</td>
</tr>
<tr>
<td>12. Presentation: Create a presentation with graphics, transitions, animation, and hyperlinks</td>
<td>2.97</td>
<td>1.04</td>
</tr>
<tr>
<td>13. Email: Send, receive, open, and read email</td>
<td>3.91</td>
<td>0.28</td>
</tr>
<tr>
<td>14. Email: Use advanced features of email (e.g. attachments, folders, address books, distribution lists)</td>
<td>3.46</td>
<td>0.66</td>
</tr>
<tr>
<td>15. Discussion Boards: Subscribe, post messages</td>
<td>2.94</td>
<td>0.87</td>
</tr>
<tr>
<td>16. Navigate the web using a web browser (e.g. Internet Explorer, Safari, Firefox, Chrome)</td>
<td>3.77</td>
<td>0.43</td>
</tr>
<tr>
<td>17. Using more advanced features of a web browser (e.g. creating, organizing, and using bookmarks; opening multiple windows or tabs; using reload/refresh and stop buttons)</td>
<td>3.17</td>
<td>0.86</td>
</tr>
<tr>
<td>18. Use a search engine (e.g. Google, Yahoo, Bing) to search for information on the web</td>
<td>3.69</td>
<td>0.53</td>
</tr>
<tr>
<td>19. Use a web authoring tool (e.g. WordPress, Wikispaces, PBWorks) to create basic web pages with text and images</td>
<td>2.34</td>
<td>0.97</td>
</tr>
<tr>
<td>20. Format web pages using tables, backgrounds, internal and external links</td>
<td>2.03</td>
<td>0.90</td>
</tr>
<tr>
<td>21. Upload web page files to a server</td>
<td>2.14</td>
<td>0.97</td>
</tr>
</tbody>
</table>
As shown in the Table 3, most participants expressed high levels of confidence in their skills related to creating and editing documents using a word processor, send and receive e-mail messages, and use a Web browser and search for information using a search engine. Most participants also rated themselves highly on their abilities to use the basic functions of spreadsheet applications. However, participants overall reported lower skill levels related to troubleshooting problems, using more advanced features of word processors and spreadsheet applications, and creating and formatting websites and web pages. Additionally, the mean score on the item on subscribing and posting messages to online discussion boards was 2.94 with a standard deviation of 0.87. This suggests that some gifted coordinators would need at least some support in order to successfully participate in an online learning community centered around a discussion forum, as well as training to participate in an online community of practice based around a wiki or blog community.

Technology Self-Efficacy

Five survey items contributed to the technology self-efficacy subscore. Coordinators were asked to rate their level of agreement with each statement using a 4-point scale where 1 indicated strong disagreement and 4 indicated strong agreement. Mean scores and standard deviations for each item in this section are reported in Table 3. Overall, the results show that participants as a group feel generally comfortable about their abilities to work with computer technologies. However, participants were less confident about their abilities to acquire new skills and troubleshoot problems. Additionally, moderate levels of anxiety were reported when learning to use new technologies, and most participants agreed or strongly agreed with the statement, “learning new technologies is confusing for me.” Taken together, these results suggest
that participants felt very confident using the tools with which they are already familiar, but much less confident in their abilities to quickly and easily master using new tools.

Table 3

*Self-Efficacy Using Technology*

<table>
<thead>
<tr>
<th>Item</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>22. I feel comfortable about my ability to work with computer technologies.</td>
<td>3.11</td>
<td>0.68</td>
</tr>
<tr>
<td>23. Learning new technologies is confusing for me.</td>
<td>3.20</td>
<td>0.68</td>
</tr>
<tr>
<td>24. I get anxious when using new technologies because I don't know what to do if something goes wrong.</td>
<td>2.94</td>
<td>0.84</td>
</tr>
<tr>
<td>25. I am confident with my ability to troubleshoot when problems arise while using technology.</td>
<td>2.71</td>
<td>0.79</td>
</tr>
<tr>
<td>26. I am confident in trying to learn new technologies on my own.</td>
<td>2.79</td>
<td>0.88</td>
</tr>
</tbody>
</table>

It should be noted that some statements in this section express comfort and confidence related to technology use, while others express anxiety and confusion. Therefore, prior to calculating the subscores, the researcher transformed ratings on items that expressed negative emotions so that high ratings would all indicate higher self-efficacy. For example, on item 23, which states, “learning new technologies is confusing for me,” a rating of 1 was replaced with a rating of 4, a rating of 2 was replaced with a rating of 3, and so on.

*Perceived Benefits of Technology Use*

The next five items on the adapted TTIS survey asked participants about their beliefs regarding the value of learning and using technologies in their professional roles. Participants were asked to rate their level agreement on a 4-point scale where 1 indicated strong disagreement and 4 indicated strong agreement. As shown in Table 4, ratings on these items were consistently high, with most participants agreeing or strongly agreeing with each statement. Given the focus
of this study, it is worth noting that the mean rating on the item “technology can be an effective professional learning tool for educators” was 3.83, suggesting there would be little philosophical resistance to using technology in professional learning and professional development.

Table 4

*Perceived Benefits of Technology*

<table>
<thead>
<tr>
<th>Item</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>27. Learning new technologies that I can use in my job is important to me.</td>
<td>3.57</td>
<td>0.56</td>
</tr>
<tr>
<td>28. Using technology to communicate with others allows me to be more effective in my job.</td>
<td>3.69</td>
<td>0.47</td>
</tr>
<tr>
<td>29. Computer technology allows me to create materials that enhance my work as a gifted coordinator.</td>
<td>3.74</td>
<td>0.44</td>
</tr>
<tr>
<td>30. Computer technologies help me be better organized in my work as a gifted coordinator.</td>
<td>3.82</td>
<td>0.39</td>
</tr>
<tr>
<td>31. Technology can be an effective professional learning tool for educators.</td>
<td>3.83</td>
<td>0.38</td>
</tr>
</tbody>
</table>

*District Technology Leadership and Coordinator Perceptions*

Items 32-36 focused on perceived support for technology use among gifted coordinators’ colleagues and supervisors. Participants were asked to rate their agreement with each statement using a 4-point scale where a rating of 1 indicated strong disagreement and a rating of 4 indicated strong agreement. As shown in Table 5, most participants perceived encouragement and positive attitudes about technology from their colleagues and immediate supervisors. However, the mean score for item 35, “a vision for technology use in my district or ESC is clearly communicated to educators,” was only 2.74, and a third of participants disagreed or strongly disagreed with the statement. Additionally, while most participants agreed that support was available for troubleshooting, fewer participants agreed that they had support for technology
integration ideas, suggesting technology support in some districts and ESCs focused mainly on “maintenance” rather than development and integration.

Table 5

Support for Using Technology

<table>
<thead>
<tr>
<th>Item</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>32. My colleagues get excited when they use technology in the professional learning process.</td>
<td>3.11</td>
<td>0.68</td>
</tr>
<tr>
<td>33. My supervisor encourages staff to integrate technology into education.</td>
<td>3.23</td>
<td>0.88</td>
</tr>
<tr>
<td>34. Technology support is available to me to assist with troubleshooting.</td>
<td>3.03</td>
<td>0.79</td>
</tr>
<tr>
<td>35. A vision for technology use in my district or ESC is clearly communicated to educators.</td>
<td>2.74</td>
<td>1.04</td>
</tr>
<tr>
<td>36. Support is available in my district or ESC to assist with technology integration ideas.</td>
<td>2.83</td>
<td>0.86</td>
</tr>
</tbody>
</table>

Correlations were also calculated between survey items 22 through 31 related to technology attitudes and beliefs and survey items 32 through 36 which relate to perceived levels of district or ESC vision and support related to technology use. A number of statistically significant (Moore & McCabe, 2003) relationships ($p \leq .05$) were found as shown in Table 6.
Table 6

**Correlations Between Survey Items**

<table>
<thead>
<tr>
<th></th>
<th>Technology can be an effective learning tool for educators</th>
<th>Colleagues excited using technology in learning</th>
<th>Supervisor encourages technology integration</th>
<th>Troubleshooting support is available</th>
<th>District has clear vision for technology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colleagues excited using technology in learning</td>
<td>.31*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Supervisor encourages technology integration</td>
<td>.30*</td>
<td>.30*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Troubleshooting support is available</td>
<td>.02</td>
<td>0</td>
<td>.60*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>District has clear vision for technology</td>
<td>.18</td>
<td>.20</td>
<td>.52*</td>
<td>.77*</td>
<td></td>
</tr>
<tr>
<td>Support is available for technology integration</td>
<td>-.09</td>
<td>.04</td>
<td>.48*</td>
<td>.84*</td>
<td>.70*</td>
</tr>
</tbody>
</table>

*Note: * = p < .05

Item 33 ("My supervisor encourages staff to integrate technology into education") was positively correlated ($r = 0.30$) with item 31 ("Technology can be an effective professional learning tool for educators"), and item 32 ($r = 0.30$) ("My colleagues get excited when they use technology in the professional learning process"). Item 35 ("A vision for technology use in my district or ESC is clearly communicated to educators") was positively related ($r = 0.30$) to Item 29 ("Computer technology allows me to create materials that enhance my work as a gifted coordinator").
Ratings on items related to district or ESC leadership and vision were also strongly and positively correlated with each other. Item 33 (“My supervisor encourages staff to integrate technology into education”) was correlated ($r = 0.52$) with item 35 (“A vision for technology use in my district or ESC is clearly communicated to educators”), item 34 ($r = 0.59$) (“Technology support is available to me to assist with troubleshooting”), and item 36 ($r = 0.49$) (“Support is available in my district or ESC to assist with technology integration ideas.”) Item 34 (“Technology support is available to assist with troubleshooting”) was also positively correlated with Item 35 (“A vision for technology use in my district or ESC is clearly communicated to educators”) ($r = 0.77$), and Item 36 (“Support is available in my district or ESC to assist with technology integration ideas.”) ($r = 0.838$).

Technology Use Outside of School

Two items on the survey also asked participants for information regarding their use of technology outside of school. The first item focused on hardware through which the Internet could be accessed. Notably, all 35 participants reported using at least one Internet accessible device at home, and 30 reporting using more than one device. Additionally, 32 of 35 participants reported using at least one portable device.

By comparison, according to a May 2011 survey conducted by the Pew Research Center, 57% of American adults owned a desktop computer, 56% owned a laptop, and 20% owned a tablet computer or e-book reader (Pew Research Center, 2011). This suggests that, outside of school, gifted coordinators as a group are significantly ahead of the population curve with respect to device adoption and have ready access to the Web both at home and many have access on the go. Thus, Internet access does not appear to be a barrier to the potential use of the Web as a tool for informal learning and collaboration away from school.
Figure 2. *Technology Hardware at Home*

A second item asked participants to indicate which types of online services they used at home. Specifically, participants reported whether they accessed social networking sites (e.g. Facebook, LinkedIn, Ning, etc.), had a personal blog site (e.g. WordPress, Tumblr, Blogger, Posterous, etc.), used a microblogging service (e.g. Twitter), or had a personalized Web “start page” (e.g. iGoogle, Netvibes, MyYahoo!, etc.).
Social networking sites were accessed by a large majority (89%) of participants, compared to 65% of the population overall (Pew Research Center, 2011). Forty percent reported using a personalized start page. Twenty percent reported using a microblogging service (compared to 13% of the population overall), and only 14% reported maintaining a personal blog (equal to the overall American adult population). These figures suggest that gifted coordinators, as a group, are generally willing to embrace online tools away from school.

**Technology Use in Gifted Coordinator Responsibilities**

The survey included eight open-ended items that asked participants to describe how they use Internet tools to help them “access data, expert knowledge, or advice you need to perform each common gifted coordinator duty listed.” The eight duties listed were based on the list of duties Ohio Administrative Code Section 3301-51-15 states that gifted coordinators “shall perform.”

In the data analysis process, all responses for each item were copied into a single long document. All responses were then read to obtain a high level sense of the ways gifted
coordinators were using technology related to performing each role. Then, the responses were read a second time with the researcher taking notes related to topics covered. Then, the list of topics was reviewed looking for similarities. Codes (Creswell, 2008) were then constructed by combining similar topics related to software applications (for example, mentions of Microsoft Access and FileMaker Pro were subsumed into a code called “databases”) and role-related functions (e.g., “record keeping,” “program evaluation,” etc.) Each response was then reviewed again and tagged with the relevant codes. Additional codes were created as needed to ensure that all data were categorized. Finally, a count was made of the number of responses that included each code.

“Assisting in the Identification of Gifted Students”

On the item asking participants to indicate how they used technology to assist in the identification of gifted students, three codes were identified: testing, research, and informing stakeholders. Five participants entered “NA” in the response box for this item.

Responses related to testing were the most common, with 30 mentions falling into this category. Responses in this category included mentions of using technology to store student testing data, analyzing and sorting data to determine which students met criteria for gifted identification, automating test scoring, and administrative tasks such as ordering test forms and scheduling individual assessments. Specific tools mentioned in participants’ responses included database applications such as FileMaker Pro and GiftedWerks (a FileMaker Pro-based runtime application tailored to gifted education program administration in Ohio) and spreadsheet applications such as Microsoft Excel. Also mentioned were online reports of district test results generated by testing companies.
The second most frequently used code for this item was “informing stakeholders,” with nine responses fitting this category. These responses focused on using public school websites to post information about upcoming screening opportunities, using word processing and desktop publishing applications to create articles for print newsletters and school bulletins, and using spreadsheet and word processing applications to generate mail merge letters and labels to notify parents of testing outcomes. One participant also mentioned using email to communicate information to teachers about signs of exceptional potential to look for in their classrooms and how to refer students for formal assessment.

Five respondents mentioned uses of technology related to research. One participant mentioned using spreadsheets to identify and monitor trends related to the district’s population of students identified as gifted with respect to underrepresentation of minority and economically disadvantaged students. Three participants mentioned using the Web to research information related to state requirements, such as the current list of assessment instruments approved by the state for use in identifying gifted children. One participant also mentioned using the Web to access expert knowledge regarding best practices related to identifying gifted students from diverse backgrounds.

“Assisting in the Placement of Gifted Students in Appropriate Educational Services and Settings”

All responses to the item “assisting in the placement of gifted students in appropriate educational services and settings fell into one of two categories: administration and research and evaluation. Ten participants wrote “NA” in the response space for this item. Fourteen responses in the administration category related to using technology to communicate with teachers and parents about students being placed in gifted education services. Most responses that mentioned
specific applications referred either to using email to send electronic messages or word processing applications to generate letters. However, one participant mentioned using Google Docs documents shared between the gifted education staff and regular classroom teachers to document students’ specific strengths to help guide curriculum differentiation and enrichment opportunities. Nine responses in this category were related to managing records related to the services students received. Again, FileMaker Pro and GiftedWerks were mentioned as software applications used for this purpose. Six responses were related to using spreadsheets and databases to aggregate and sort assessment data to determine students’ eligibility for gifted education services offered.

Thirteen responses were coded as relating to program development and evaluation. Five responses mentioned using the Web to find information about the gifted education services offered in other school districts, and one response mentioned using the Web to look for colleges that offered courses accessible to high school students. Two others mentioned using the Web to find scholarly research on the effects of various approaches to meeting gifted students’ needs. Two participants also mentioned using e-mail to directly contact gifted education experts for advice on service placement issues.

“Assisting School Personnel in the Design of Gifted Education Services”

Of all the job duties specifically addressed in the survey, overall, participants reported the greatest use of Internet tools to facilitate collaboration with other school personnel in their work around supporting the design of services for students. Interestingly, however, eight participants reported using no Internet tools on this item. Eight responses mentioned using Internet tools for research, including checking state requirements, finding articles on best practices, and looking for information about services in other districts. Two participants mentioned using the Web to
directly contact outside experts for guidance. Five also mentioned accessing databases to compile information about student achievement and growth to identify existing program strengths and areas in need of improvement. One mentioned using a spreadsheet shared with a district treasurer to facilitate program budgeting. Seven participants described using email to discuss scheduling issues and curriculum design, and one mentioned using shared Google Docs documents to work collaboratively with classroom teachers to differentiate lesson plans and to share with teachers examples of curricula appropriate for gifted students. Three coordinators also described using email to provide informal coaching and professional development to teachers, distributing items such as links to helpful websites, articles, and lesson plan ideas.

“Assisting School Personnel in Ensuring Compliance with Data Reporting and Accountability”

On the survey item asking participants to report how Internet tools were used in the process of assisting districts in gathering and reporting state-mandated data, unsurprisingly, almost all responses focused on data gathering, data analysis, and data reporting. With respect to data gathering, eleven responses were related to intradistrict communication efforts to collect information needed for reports, such as using email to request documents from administrators and data exports from district data managers, and online surveys designed to gather information from teachers related to classroom practices. Eleven responses were related to using networked tools for aggregating and analyzing data. Of these, 10 participants mentioned server-based student information systems (e.g., DASL and Infinite Campus.) One mentioned using a shared Google Docs spreadsheet to gather and analyze information from stakeholders within the district. Five responses mentioned visiting the Ohio Department of Education website to research state requirements, and two mentioned using email to request assistance in understanding these
requirements. Two participants also mentioned using email to communicate to circulate draft 
reports to local administrators and alert them to potential compliance issues.

“Consulting with School Personnel on District Strategic and School Improvement
Planning”

Responses on the survey item asking gifted coordinators to describe Internet tools used in 
consulting with school personnel on district strategic planning were, frankly, troubling.
Seventeen participants (nearly 50%) reported using no technology in this process, with two 
participants adding notes explaining that they were simply not involved in strategic planning or 
school improvement efforts. It is unclear from the data whether the other 15 participants who 
reported using no Internet tools were involved in strategic planning and school improvement 
efforts but made no use of Internet tools in the process. Four other participants who did report 
uses of technology related to this job role mentioned using email to send articles and other 
resources to administrators and teachers who were involved in strategic planning and school 
 improvement efforts to educate them on gifted education issues and advocate for the 
consideration of gifted students’ needs in big picture planning. Of the 18 responses that clearly 
indicated direct participation on the part of gifted coordinators in strategic planning efforts, 10 
mentioned using email to participate in conversations with local colleagues, and one mentioned 
using a school website to gather input and feedback from local families with gifted children.
Eight participants mentioned using online tools to conduct research and gather information to 
bring back to planning teams. Examples of responses in this category included accessing district 
data stores to gather information about the achievement of gifted students, accessing state gifted 
education guidance documents, and accessing list serves and online bulletin boards to stay
current on evolving state requirements and funding issues. Interesting, no participants mentioned using online resources to compare their districts with others on this item.

"Assisting School Personnel in Evaluating the Effectiveness of Gifted Education Services"

As with the item addressing strategic planning, a substantial number of participants (43%) indicated no use of Internet tools related to evaluating the effectiveness of local gifted education services. Again, it is unclear whether these responses indicate that networked tools are not used in evaluation efforts or whether districts are simply not evaluating the quality of services provided to gifted students. One additional participant mentioned keeping a personal journal on her computer for “personal benchmarking,” recording her own professional goals and goals for the program, stating, “I try to evaluate my own effectiveness. The districts I serve have little interest.”

Among participants reporting using online tools for service evaluation purposes, 81% of the examples given focused on data gathering and analysis. Seven mentioned using online databases to access “value added” student growth data, five mentioned conducting online surveys of stakeholders, one mentioned using an iPad for recording and sharing observations from classroom walkthroughs, and one mentioned working with a district data manager to create new electronic reports connected to the district’s student information software package that would allow the gifted educations staff to more easily track gifted students’ progress over time.

"Assisting School Personnel in Creating and Updating District Identification Plans and Written Service Placement Criteria"

Responses to the survey item on technologies used in maintaining district identification plans and service placement criteria fell into four categories: reviewing district data, researching potential changes, collaborating with colleagues on potential changes, and communicating
identification plans and service criteria to stakeholders. Nine participants indicated using no Internet tools in performing this job role.

Related to research potential changes, five participants mentioned used district databases and spreadsheets to review current data related to the number and demographics of students identified as gifted, the number and demographics of students eligible for district gifted education services, and to compare local numbers with those of other districts accessed through the state Department of Education website. Five participants also mentioned using online surveys to gather local stakeholder input, and two mentioned using e-mail to contact other districts for information about their policies and practices.

Eight responses were related to using electronic communication tools to collaborate with local colleagues on possible changes and updates. Six participants using e-mail to solicit advice and input from staff, one mentioned using shared Google Docs documents to allow all staff to contribute ideas, and one mentioned using online tools to facilitate an online professional learning community charged with studying current district data and research-based practices to develop recommendations for changes to the district’s gifted identification plan and continuum of services.

“Assisting School Personnel in Developing, Appropriately Sharing, and Maintaining Written Education Plans for Gifted Students”

In Ohio, state law requires school districts to develop Written Education Plans (WEPs) for students who are receiving gifted education services. Participants’ responses to the survey item on the use of Internet tools in the process of creating, maintaining, and sharing WEPs were coded in five categories: creating “document” WEPs, creating and sharing “database” WEPs, distributing WEPs, communication with parents, and research. Seven participants indicated using
no Internet tools in creating and managing WEPs. Twelve participants reported using Internet
tools to create “document” WEPs, which the researcher operationally defines as WEPs created
using a word processing application. In contrast, “database” WEPs, also mentioned by 12
participants, are operationally defined as WEPs created and hosted electronically using a
database application such as FileMaker Pro or a dedicated student information software package
(e.g., GiftedWerks.) Six participants reported using email to distribute copies of WEPs to
relevant stakeholders, five participants reported using Internet tools to communicate with parents
about WEP-related issues, and three mentioned using online tools to conduct research. For
example, one participant mentioned using the Web to research services offered by other districts,
and another mentioned using an electronic database to link student progress report and
achievement data with the type of gifted education service provided for the purpose of evaluating
the impact of various types of services.

Two participants added comments suggesting advantages of database WEPs over
document WEPs. One noted that hosted database WEPs made it possible for all gifted education
staff and gifted students’ classroom teachers to access their students’ WEPs on an as-needed
basis, and that being able to do so reduced the potential of a teacher working from an outdated
WEP while increasing student privacy protections by eliminating WEPs being circulated in hard
copy or as email attachments. Another commented that having WEPs in a database saved
teachers many hours of work versus creating stand-alone document WEPs, and that being able to
run search queries on all students’ WEPs at once made it easier to use the documents as data
sources for evaluation purposes and saved time in generating year-end reports.
Case Studies

After all study participants completed the survey, six participants were invited to participate in follow-up interviews. To select interview participants, subscores were computed for each section of the adapted TTIS instrument. Then, all subscores for each participant were averaged to yield a composite score. Participants were then rank ordered according to this composite score. The three participants with the highest composite scores who indicated on their surveys that they “would definitely participate,” or “would probably participate” if invited to participate in a follow-up interview were contacted to request interviews, all of which consented. Similarly, the three participants with the lowest overall composite scores who expressed a willingness to participate in a follow-up interview on the original survey were contacted. Two of these participants were interviewed.

Figure 4. Interview Participant Survey Scores
As described in Chapter 3, the interviews consisted of a guided drawing exercise designed to create a visual depiction of the information sources accessed by the participants to address a recent complex issue they faced as a gifted coordinator and a semi-structured interview using questions focusing on coordinators’ personal learning networks and their use of Internet tools in informal professional learning. The interviews were captured in digital audio recordings supplemented with handwritten notes. Immediately following each interview, the researcher wrote a summary of key points from the discussions. These summaries were shared with the interview participants by e-mail along with a request to provide corrections or clarifications related to any points they felt were not accurately or completely captured by the researcher.

Steven

At the time the survey was administered, Steven was completing the last year of a six-year stint as a gifted coordinator in a suburban school district and capping a 38-year career in public education. Despite being among the most veteran educators surveyed, Steven was a counterexample to the stereotype of more senior educators being technophobic and resistant to embracing new tools. On the adapted TTIS survey, indicated he could “teach others” how to perform every action listed in the items in the technology skills section. Steven’s subscore on the technology self-efficacy section was also a high 3.7 compared to a group mean of 2.95, and his subscore on the beliefs and attitudes section of the survey was the maximum possible score of 4.0. Steven also reported being a heavy technology user away from school, using a desktop computer, laptop, and iPad at home. Steven also indicated using social networking sites, a microblogging service, having a personal blog site, and using a personalized start page in his home Web browser. Steven indicated disagreement with the statements that “technology support
is available to me to assist with troubleshooting,” and, “a vision for technology use in my district is clearly communicated to educators,” however.

The issue Steven chose to focus on in the drawing task during the interview was a need to address the fact that the number of students who were qualifying for gifted identification in his district had declined significantly, resulting in a very small number of students being eligible for services at early grade levels, making the cost of services at those grade levels difficult to justify. Therefore, Steven first sought to determine whether changes to the district’s gifted identification process at early grade levels could address the problem. He began by accessing state department of education information about assessments online. He then emailed a private psychologist who consults with the school district, introducing the issue and sending the chart of assessment instruments approved by the state for use in identifying gifted children. After this initial contact, Steven communicated with the psychologist through multiple channels, including phone conversations, face-to-face meetings, and continued exchanges of electronic mail. Steven reported that the psychologist was his most important resource in this phase of his efforts, and that he relied on the psychologist because of the psychologist’s expertise in the area of assessment. However, Steven also solicited input from other gifted coordinators at the county level educational service center. In this process, e-mail and phone conversations were the most important communication channels, although he also met with them face-to-face once as a group and had a second face-to-face meeting with one of the county coordinators.

After researching making changes to the district’s identification process, Steven and the psychologist arrived at the conclusion that selecting different testing instruments was not likely to significantly increase the number of qualifying students, it was determined that making changes to the district’s gifted education service model would be needed to adjust to having a
smaller population of gifted students. At this point, he made the district board of education president aware of the issue during a face-to-face discussion, and then initiated communications with the elementary school principals to explore options.

Steven indicated that the elementary school principals were the resource he accessed most frequently in this second stage of the process, communicating via e-mail, telephone, and face-to-face meetings with them as a group and as individuals. He also consulted with the gifted education teachers individually in in-person meetings. Ultimately, a recommendation was made to eliminate a second grade gifted education class.

In the subsequent interview, Steven talked about how he used technology in his work as a gifted coordinator, the degree to which he used technology to support his professional learning, and technology as a medium for collaboration. In describing how he used technology in his responsibilities as a gifted coordinator, Steven pointed out ways technology played a role in almost every aspect of his work. It also became clear that Steven had made numerous efforts to introduce collaborative online tools into his professional practice. Within his own district, Steven used Google Docs extensively, using shared documents to collaborate with building staff, shared spreadsheets to track student data, and developing online program evaluation surveys using the Google Docs form tool. His district also moved from creating and managing gifted students’ WEPs on paper to utilizing a hosted WEP system that made information more readily accessible to teachers.

However, Steven expressed some frustration at the outcome of attempts he had made to provide leadership and support to get other gifted coordinators in his region to adopt collaborative online tools in order to expand their ability to work collaboratively outside of monthly face-to-face meetings. He described having approached the leader of their regional
gifted coordinators’ organization about using Google Docs to create shared repositories of resources and to facilitate collaborative work, but there being little follow through, noting that while the regional group’s leader was very knowledgeable about gifted education issues and a well-liked and respected by the members of the group, she was, “not a tech person,” and suggested she and some other members of the group did not “fully grasp the potential benefits of using anything other than e-mail.” Therefore, his ideas were largely dropped. Coincidentally, the leader of the group also participated in the survey, and indeed had the second lowest score (2.6 out of 4.0) of all study participants on the subscore related to perceived benefits of technology.

When asked directly whether he felt he was a member of a “community of practice” related to gifted education, he reflected for a moment and then responded:

Not really. I felt like I was a member of a group with people that I liked and where I would sometimes get useful information, but not a group that really works collaboratively.” He continued, explaining, “connecting only once a month, and then sometimes you’d have to miss a meeting because of things going on in your own district, there wasn’t enough ongoing contact to really work on things together. Certainly we would share things we had with each other if someone needed something, but in terms of doing real work, we each really did our own thing.

When asked if he thought he might have felt like he was a member of a true community of practice had the group embraced the collaborative tools he had suggested, he answered:

I don’t know. Probably more so, but that depends on what other people do. Just because the potential would be there wouldn’t by itself make it collaborative. It’s not collaborative until other people start using it, too. Our coordinator group gets by on e-mail, which I think works fine for organizing meetings and sharing some kinds of
information, but isn’t really good for collaborating with a group of people. But we keep using that because everyone is in that habit and everyone knows how to send e-mail. Nonetheless, Steven still felt like the Internet was a vital tool in his own professional learning. When asked how frequently he engaged in online informal learning, he replied:

Oh, gosh. All the time. I mean, I would look things up almost every day, and read articles and things online all the time. You really have to, I think, to stay current, and I’m curious by nature. I’m always interested in learning new things, and the Web is right there, so it’s just constant.

Carly

Carly is serving in her fifth year as gifted coordinator for a school district she described as “blue collar suburban,” her tenth year as a gifted coordinator overall, and her 21st year working in education. On the TTIS, Carly’s subscore on the technology skills section was 3.43, with low ratings only on items related to troubleshooting. Her self-efficacy subscore was 3.2, with no item rated below 3. On the technology beliefs and attitudes section, her subscore was a maximum 4.0, and on the section rating perceived district support for using technology, her subscore was 3.8, which tied for the highest subscore in the sample.

For the issue drawing exercise, Carly focused on an effort to increase student growth in mathematics as measured by “value added” assessment data accessed through a state-run website. She stated that she and the district’s curriculum director were concerned that some of the brightest middle school math students were showing less growth than they had expected, so initiated a data study to look for possible patterns that could guide improvements for related to increasing rigor and better predicting which students would benefit from placement in early placement in high school level math courses.
Given the focus she chose, it is perhaps not surprising that she emphasized looking at data points when asked to identify the sources of information and expertise she utilized in her process. She mentioned several sources of assessment scores, including the Iowa Algebra Aptitude Test, Explore test for eighth graders, MAPS scores from lower grade levels, InView, state achievement tests, and end-of-course exams based on the new “Common Core” standards. As she examined the data at her disposal, she realized that the different tests were yielding sometimes contradictory information. Therefore, because they viewed success on the high school level Common Core-based end-of-course exams as the most important test outcome, she decided to conduct a regression study to determine which earlier assessments were the best predictors of success on the end-of-course exams.

For this process, she said she approached her husband, who she said was highly skilled in statistical analysis and had access to specialized statistical analysis software not available to her in the district. While Carly described her husband as a “guru” in the process, it was also clear from the vocabulary and level of detail she used in describing the analysis steps followed that she also had advanced statistical skills as well as a keen interest in working with numbers. While her ultimate goal was on improving instruction and for gifted students, she also seemed to have an analytical mind that took some pleasure simply from the process of exploring the numbers.

Her approach to investigating the problem was highly quantitative and mostly solitary, but her approach to developing and implementing improvements was much more collaborative. Here, too, however, technology tools played important roles. For example, she used the Web to access data on the performance of students from similar school districts, and reached out by email to other gifted coordinators in her region for information on practices in their schools.
Finally, she created a wiki to share professional development resources with local teachers to support some collaboration around increasing the rigor of the middle school math curriculum.

When asked in the interview whether she felt like she was a member of a community of practice, she responded:

Oh, yes. Probably more than one. I think we worked as a community of practice within the district to improve what we were doing for our middle school math students. I’m also a member of a pretty active community of practice related to ELL students (English language learners) in our part of the state. We meet regularly and have a wiki that gets pretty frequent use. Also, I kind of feel like there’s a community of practice among gifted coordinators in (our region). Sometimes it’s really active and sometimes it’s less so, and maybe less this last year since a lot of people weren’t sure if they’d even have jobs when school started so didn’t want to jump into new things. But at times it’s been really helpful.

When asked whether technology played much of a role in sustaining that community of practice, she responded, “Not too much, other than e-mail about upcoming meetings and sometimes updates on issues that are going on and conversations between individuals.” When asked what might be needed for that group to embrace collaborative tools like the ELL organization she mentioned, she answered, “Well, again, we had a lot of people in survival mode, so there just hasn’t been a critical mass of people wanting to wade in with everything else going on.” Coincidentally, she actually brought up Steven as she continued, saying:

I remember (Steven) offering to help teach people how to use some things, but we have quite a few people who are getting close to retiring so don’t see a lot of benefit in investing time to learn something new that maybe they’ll only use for a year. I wish we
did do more, though. I know we have a lot of really smart people in this field and it would be great to be able to say, “I wonder what Sally’s district is doing for this?” and then just have that information at your fingertips. Maybe we will eventually. Hopefully people will be willing to make that up-front investment of time again once things kind of stabilize. There’s too few of us and too much to do, so it just makes sense to try to share more and collaborate and not all be driving ourselves crazy reinventing the wheel every day in every district in the state.

_Megan_

Megan is the gifted coordinator for an affluent suburban district in her 28\textsuperscript{th} year as an educator. In her second year as a gifted coordinator, Megan was one of the newest coordinators participating in the study. Her TTIS subscores were among the highest of all participants: 3.9 on the technology skills subscore, 4.0 on the technology self-efficacy subscore, 4.0 on the subscore related to perceived benefits of technology, and 3.94 on perceived local support for technology use.

For the drawing task, Megan described an effort to improve gifted education services being provided to middle school science students. When she first started as gifted coordinator, students were being pulled out of their regular science class one day per week for science enrichment. However, parents and teachers expressed some dissatisfaction with the existing service, as the enrichment program was not well aligned with the overall science curriculum sequence, and gifted science students were not achieving as highly as expected on science assessments, particularly related to earth science.

Megan described a broad effort to explore options for changes. She began by acknowledging that her prior experience had been at the elementary level, so one of her goals
early on was to ramp up her knowledge related to secondary education through self-directed study. Megan indicated that online research was an important part of this process that is still ongoing for her. Among online resources she cited as being particularly valuable to this particular issue were articles and a position paper on gifted education in the middle grades developed by the National Association for Gifted Children. However, print media resources were also part of her self-guided learning, and Megan noted that she had studied books she inherited from her predecessor, as well as books on science curriculum design and materials from a national curriculum reform initiative in which the district was a partner.

Peers and colleagues were also important partners and resources in Megan’s efforts. First, Megan noted the district took a team approach to decision making and planning. As part of the process, Megan met with district science teachers, gifted intervention specialists, the curriculum director, the building principal, and guidance staff. Informally, she also met with district students and parents by phone and face-to-face. Beyond the district, Megan sought advice from state Department of Education gifted education consultants by phone. She also said that she attempted to contact gifted coordinators in other districts for information about their gifted service models and curriculum, but got little response. Between meetings, Megan frequently traded email with district staff gathering ideas and feedback.

When asked whether she felt like she was a member of a community of practice in gifted education, she hesitated briefly and then answered:

We’re all working for the good of all our students. So, yes. Am I the one advocating the hardest? Probably. Do I feel supported? Yes. All the time? No. Sometimes I have to get on my soapbox, even among teachers. But not among parents. They know I’m advocating for them. Students know I’m advocating for them. And I’m not being negative about the
teachers. I know they have a lot of different types of students they have to work with, but sometimes you do feel a little like you’re on your own island. But overall, yes, I do feel supported. I know compared to other districts we’re really fortunate here. We’re funded by our district, and we can do a lot of the things we want to do.

When asked if she felt like she was a member of a community of practice of gifted coordinators beyond the district, Megan noted she was a member of a regional group. However, she also said, “There is support there, but we each have our own issues in our own districts. It brings me back to reality when I go there and realize how many of them wear lots of other hats.”

Megan noted she was also on a leadership committee for the state gifted education advocacy organization, and felt badly to hear about many gifted educators losing their jobs due to budget cuts and changes in the school funding system. “It’s devastating what’s going on out there around the state,” she said. In this climate, however, she also expressed feeling some guilt about asking others for support. “Sometimes you go there with something in mind you want help with, but my challenges are really about growing and improving our programs since we’re well supported, and theirs are about how to survive or cut things and trying to limit as much of the damage to kids as you can, so it can be awkward. We are so fortunate here.”

Megan was asked, beyond providing a source of personal and moral support, whether the regional coordinator group was a hub of collaborative work. She answered:

You know, I feel support there, but also I feel like people just want to go and get information and go back. They want to learn about acceleration, or early entrance to kindergarten… just kind of get the latest headlines, whereas I feel like, “I want to talk to you about what’s working and what’s not working in your district.” I contacted districts about what they were doing with science, you know, to ask, “What are you doing? Is this
or that working for you? Is this bad? I’m fairly new at this, so what do you think?’” But with everybody pressed for time and now with so many gifted programs losing funding and us being a fairly wealthy school district and not wanting to be insensitive I haven’t pressed for that much.

When asked to reflect on the role of technology in supporting her informal learning, Megan spoke highly of the level of technology resources and support she was receiving in her current district. She compared her current position to her past positions in a less affluent district and a small Catholic school:

I remember having those years when I first started teaching 28 years ago where there was really no technology and we were rationing even the basics, like writing things really small so you could fit two copies on one sheet of paper you cut in half. So to see what we have available now, not just in terms of computers, but access to all this information is pretty amazing. We have all kinds of databases we can access to get a handle on how kids are doing and really keep tabs on their progress. We also just adopted Google Enterprise so we can share everything within the district as far as actual materials. Every teacher has a laptop now, and we got iPod Touches through a grant last year, some iPads… anyway, there’s a lot of technology available.

Megan also discussed having strong support from the administration and technology staff for using technology to help her work more efficiently. For example, Megan said that, when she first started working for the district, all the gifted education data was housed in paper files in boxes.

It was hard to find anything, because if you wanted to look up something about a kid, you had to know first what year he was identified, then find that box, then go through that to
find his file, then sort through all the paper in that to find his WEP or whatever it was you were looking for. There was no system there. Then last year we were able to get at least the identification records online. Now we’re moving toward getting everything in that system. I feel lost without technology, so being able to have everything digital and at your fingertips will be huge for me. I know that probably seems like a small boring thing, but when you stop and think about how much time you spend going through boxes and files over the course of a year, it really adds up. We also have our WEPs in ProgressBook now, so almost everything we used to handwrite we can put into our system now. Then of course that saves still more hours at the end of the year when you’re doing your self-reports because you can just export what you need. Now our EMIS coordinator is working with us to format our data to help simplify that, so I know we’re ahead of the curve here. Ideally what I want is to just be able to click on a child’s name and be able to get exactly what I need at the drop of a hat. And I want that for my teachers, too -- to be able to just go in and see what we know about a student and the information they need to tailor the experience. Right now we’re up against (our regional data aggregation site) trying to push them to let us customize things even more, but within the district it’s been really great.

Megan also reported using technology to stay more connected with the teaching staff. While she noted that their school campus put her in close physical proximity with most of the schools in the district, allowing for regular face-to-face interaction, online chat had become a frequently used tool for exchanging quick messages. She also said e-mail was still an important communication tool. Megan noted that her choice of medium was sometimes driven by the topic of the communication. “If it’s about something that I want to make sure is documented, it’s nice
to have e-mail because then everything’s in writing. If it’s more of a personal issue or just a quick thing I’ll walk down the hall.”

Interestingly, Megan argued that having portable hardware and remote access to online communication tools probably actually increased how much face-to-face interaction she had with teachers and students. Megan said, “I don’t feel like I have to sit at my desk if I’m expecting an important message or waiting for something. I can still go to that classroom and know I’m connected. It’s funny, because now hardly anybody calls me because they know I don’t answer the phone and if they leave me a message I’m not going to get to it for a while. They’re like, ‘Where are you?’ Just send me an e-mail.” Megan indicated she always had her laptop or iPhone with her. “I don’t want to be one of those people that goes to a meeting but then has their head stuck in their phone, but I do want to be reachable, and carrying that with me allows that.”

When asked what role technology played in supporting her ability to provide leadership and make informed decisions, Megan responded, “It’s huge. For example, one of our other big issues last year was, and still is, cluster grouping. Some teachers were resistant, so to be able to provide good, legitimate resources to help people understand what we are doing and help them see that the choices we’re making aren’t made lightly but are really grounded in research on what’s good for kids is a big deal.” Megan continued, “Another example is that I’m not completely satisfied yet with what our WAPs (written acceleration plans) are like, so I’ve been researching other ways to do those, looking at other districts.” She also reported spending a significant amount of her own time at home engaged in online informal learning related to her professional role. “I’m one of those people who always has a stack of sticky notes of things that I want to remember to look up and find out more about. I’ll be in front of the TV, but I’m on Google at the same time looking at different books or activities that would be good to use in our
classes, or looking at research on why certain groups of students do or don’t make growth year after year and so on. I also use it to keep tabs on issues that are going on in the world of education, so I’ll look at the Huffington Post education section, some things I subscribe to through Twitter and Facebook… there are so many things going on these days with education, and that’s just how I keep plugged in to that. Also, not always things about gifted. I’m also interested in what’s happening with technology. Gosh, when I think about it, I spend a lot of time doing that -- hours and hours every week, probably. Sometimes you have to unplug, of course, but I’m fortunate to be in a position where I’m naturally interested in what I do so I like to be able to go online and feed that.”

Bev

Bev was serving in her 11th year as a gifted coordinator for an urban district, and in her 32nd year as an educator. Bev’s subscore on the technology skills section of the adapted TTIS was 2.67, more than a full standard deviation below the group mean. Her subscore on items rating the perceived benefits of technology were also well below average at 2.89, as was her subscore on items rating perceived level of district support for technology integration. She also expressed a relatively low level of self-efficacy in learning to use new technologies and solve problems, averaging a rating of 2.4 on technology self-efficacy items.

The issue she described in the drawing exercise focused on efforts to maintain gifted education services at the middle school grades after budget issues led to the elimination of the only gifted education teach position at that level. Previously, students had participated in an enrichment program led by a gifted intervention specialist. However, with the cutbacks, the district was facing the possibility of having no services available for students at that level.
In the drawing task, Bev described exploring options by consulting with the middle school principal, academic department heads, and, informally, with parents in a series of phone conversations and face-to-face conversations. When prompted to describe any role technology played in this process, Bev added visiting the Ohio Department of Education’s website to download a guidance document explaining minimum standards for gifted education services and a report summarizing research regarding the costs and benefits of various models of gifted education services, and information about academic acceleration. She also noted having communicated about the issue with staff members within the district and with a parent of a gifted student who had written to complain about the elimination of the gifted education teacher’s position at the middle school.

Ultimately, the district decided to reclassify Bev’s position, adding teaching middle school enrichment classes on top of her administrative responsibilities and teaching Advanced Placement courses at the high school. Bev explained that she had recommended that the middle school create cluster groups of gifted students within core language arts, math, and science courses to create a critical mass of gifted students in each class to make differentiating instruction more manageable and to allow her to work closely with the teachers of these courses to help support them since none had training in meeting the needs of gifted students. However, she said there was resistance to the proposal on the part of middle school teachers resistant to the grouping strategy. Bev discussed feeling guilty about the “thin” level of service that resulted, as she could only reach each student for a short period of time per week and had to scale back efforts she had been making to offer professional development and curriculum differentiation assistance to teachers around the district:
You can only be in one place at a time, and with me tied to the classroom half the time, sometimes you can’t get to everything that you know is “best practice.” It was really a scramble just to be able to do our screenings and get the WEPs out for the students getting formal service.

When asked whether she felt like she was part of a community of practice related to gifted education, Bev explained:

I used to when we were more fully staffed. The gifted teachers and I across the various levels in the district worked well together and were able to do some special events and things for families. We would also share interesting curriculum ideas when one of us would to a conference and find something exciting. Now, though, there’s not as much collaboration since there are fewer of us and since the gifted teachers are just at the elementary level, so our curriculum is naturally very different. I also don’t go to the (regional coordinator group) meetings as often now since I have to be on site at specific times for the pullout classes I’m teaching myself. We do have an e-mail list serve, though, so if there’s a big issue going on I usually find out about it reading through the minutes that get mailed out. Then if it looks like there’s something I need to know more about, I might call one of the other coordinators or the state.

Bev admitted to not being “very tech savvy,” but that she was comfortable using e-mail and using Google to look up information, and that she was using spreadsheets and document templates to manage student data and WEPs more efficiently than when she was “doing everything on paper.” Bev said, “I know we could probably do a lot more with making things electronic, but making the shift takes time that nobody has right now, so that may be a job that
gets left for whoever comes in after I retire.” Bev also indicated that, if she keeps teaching, she would like to try to get some training on how to better integrate technology into the curriculum:

There’s a big push on “21st Century Skills” going in our part of the state, and the kids always like going to the computer lab. Even though I’m not a computer whiz, I do make a point of taking the kids to the computer lab sometimes to do online research for projects, and sometimes I’ll give them the option of making a PowerPoint instead of writing a traditional paper. You asked about our informal professional learning, and I would say learning more about using technology with students is something that I should do. I’ll probably keep my eye out for a workshop or two I can take over the summer on that.

When asked if she preferred formal training over informal learning when it comes to learning new technologies, she responded:

Well, it seems like you always have to get some hands-on practice to get comfortable using it, but sometimes when I try to do something all on my own I reach a point where I get stuck and then it’s frustrating. For me, I think the ideal would be to have someone give me an overview and show me how to use it, and then be around for awhile in the background while I try to do things on my own to be there to help if I get stuck. I guess kind of a mix of the formal and hands-on, but definitely with another person rather than all on my own.

When asked about her use of technology away from school, Bev answered:

I don’t spend a whole lot of time messing around online. I did finally break down and get on Facebook, so sometimes I’ll go into the den and check up on that in the evening, and pretty often I do a round of e-mail catch-up at night, especially if it’s one of the days
when I’m not in my office in the district. I’ll also sometimes read the news online or Google things if there’s something specific I’m trying to find.

When probed about using the Web for informal learning at home, Bev said, “I might do that once in awhile if there’s something new coming down the pike. I’ve been in gifted for a long time, though, so feel like I have a pretty good handle on what the kids need.”

_Lara_

Lara was starting her second year as a gifted coordinator after a serving for many years as a classroom teacher. Here composite score on the adapted TTIS was 2.09 with a subscore of 2.43 on the technology skills section. Though her views about the value of technology were positive overall, her subscore on the technology beliefs score was 2.93, below the group mean of 3.22.

On the drawing task, Lara chose to focus on a new effort in her suburban district to use “value added” data to improve curriculum and better align it with academic content standards. Lara was serving on a district committee that included its “curriculum council” which included the superintendent, principal, department heads, and academic subject coordinators, and serving as a liaison between members of the committee and teachers. Lara explained that it was a “data driven” process, so creating and manipulating spreadsheets online had been the primary application of technology to date. While e-mail as also used for some administrative tasks related to the committee’s work and to distribute background information, most discussion and collaboration among committee members had so far occurred in face-to-face meetings.

Lara did consider herself to be part of a community of practice related to gifted education through a regional gifted coordinator’s group. When asked what role technology placed in supporting or sustaining that community, again, Lara said e-mail was “the main application.” She continued, “There are a couple of people in that group who are very good with technology, but
overall the way the group uses technology is mainly just e-mail and maybe online calendar invitations. We even had some problems with technology at the meetings, so they keep things fairly simple.”

When asked whether she used the Web in her own informal learning, at first she answered, “I don’t really do much research. I do email parents, but, to be honest I don’t really do much online research.” But, upon further reflection, she said, “Well now, I guess I have done a fair amount of searching for higher level math curriculum, and then the other day I was researching some policy information on the state website. I guess I probably do spend at least a couple of hours online, and I think the amount of learning online I do is probably increasing. The ease of access is a big factor in that, and I think I’m starting to get more comfortable, too. Plus, now that the district has given all of us brand new laptops, that’s getting even better.” She continued, “I’m probably able to do more of that at home now versus being limited to getting everything done at school.” She also said the district was trying to be more supportive of staff enhancing their technology skills. For example, she mentioned a “Technology Tuesdays” afterschool professional development at the high school, although she could not usually attend because she does not get out of school in time. She was also looking forward to getting a SmartBoard in her classroom and being trained to use it, and would also soon be attending a meeting to plan using electronically shared WEPs. “When I first started, we just had a purple folder that followed a kid the whole way through, but more and more things are going online to make them more accessible.” Overall, she gave the school credit for working to expand access to technology and do more to integrate it into instruction and professional practice.
CHAPTER V: CONCLUSIONS, DISCUSSION AND RECOMMENDATIONS

Case Study Summary

“Higher Technology” Case Synthesis

Even though Steven, Megan, and Carly, the three case study participants selected from high scorers on the TTIS, each described different sets of issues in their interviews; there were some similarities among them. First, they all seemed to see online tools both as communication tools and as tools for thinking and problem solving. Like the “low technology” cases, they used e-mail to connect with others and office applications to create resources and records in their daily work. However, they also all described using specific online resources as tools in their own thinking. For instance, Megan described working to connect data on the services and curricula students were provided with the outcomes they achieved. Bev described using statistical software to not only distill information from individual data sources, but to identify relationships between existing data sources to help determine what data was actually worth collecting and considering in making choices on behalf of students. Steven believed that, while his regional coordinator group was somewhat helpful, it could be even more valuable if systems were adopted that would make it possible to more directly access each others’ resources and work collaboratively to develop new ones.

Additionally, all three expressed high levels of self-efficacy regarding learning to use new technologies in their work, and seemed to derive some pleasure in expanding their knowledge over time, both related to technology and to gifted education practice. Interestingly, with respect to online data, as the amount of data these coordinators had access to increased, the more they seemed to want to have access to still more data. Carly spoke of the importance of having a single student identification number used in all district records to facilitate linking
together databases, and Megan talked about advocating to have gifted education records integrated with the overall student information software package in her district to make it easier to explore relationships between the kind of support students were provided and the academic growth they attained. Steven talked about the value in being able to access resources across districts. Carly perhaps summarized this impulse best, saying, “the whole point of looking at data is to move away from trying to run your program based on guesses and hunches. Your instincts lead you to questions you want to explore, of course, and your assumptions are right a lot of the time, and it’s nice when the data verifies or validates that. But, we also know that sometimes assumptions aren’t right or not right entirely, so it’s good to check those with data. But then when you go into the data to look for one kind of pattern, sometimes you find something else you also want to look at. So then you want to investigate that, too, but can’t always because you don’t have that data or you can’t get access to it, or you have to do a lot of things manually because things aren’t set up to let you pull those sources together. Hopefully down the road it will get better as we’re at least capturing everything electronically now.”

A third connection across the high technology participants was that all three used technology fairly extensively outside of school and expressed having decent levels of leadership and support for using technology in school. All three reported owning smart phones or tablets, and all three had a presence online. All three mentioned customizing their start pages, having social networking profiles, using blogs or microblogging services, and following news and discussions related to their professional lives while away from school. However, from a community of practice perspective, all three acknowledged that, as technologically intrepid as they were as individuals, the tools they used and the degree to which they worked collaboratively hinged largely on others. As positive examples, Megan repeatedly expressed gratitude for her
district’s willingness to provide access to technology, train people how to use the resources available to them, and work with her to make the online resources they maintained iteratively more accessible and useful, and Carly mentioned her administrators’ commitment to working together around data. As a negative example, Steven expressed how simply having access to free collaborative tools was not enough, and that it takes support from an organization’s leadership in some cases to move beyond working and thinking together solely through e-mail.

“Lower Technology” Case Synthesis

In contrast to the higher technology cases, online communities and resources played a much smaller role in the informal learning of the lower technology cases. In part, this may be related to less convenient access to online resources among participants in the lower technology group, as one member of the group had no mobile Internet device and the other had acquired a laptop through her school only recently. In comparison, all participants in the higher technology group owned multiple mobile Internet devices.

Perhaps related to having less ubiquitous Internet access, the participants in the lower technology group used fewer types of online services. While the participants from the higher technology quintain all used a wide variety of online services (e.g., blogs, microblogs, customized start pages, etc.), both lower technology participants used only social networking sites. One mentioned signing up for Facebook to stay in closer touch with her children, and the other mentioned joining LinkedIn after being guided to do so by an administrator on the district’s curriculum committee. In contrast to two of the higher technology case study participants, neither of the lower technology participants mentioned their social networks as playing a role in informal professional learning, however.
However, it is worth noting that even the participants who scored relatively low across subscores on the TTIS expressed generally positive views about the impact of technology in their professional roles. Additionally, although the lower technology participants expressed lower levels of confidence in their abilities to learn new technologies on their own, in their interviews, both participants did express a desire to improve their technology skills.

*Quintain Comparisons*

Even though all case study participants reported using technology in both their leadership roles and their informal learning, a few important distinctions between the higher technology and lower technology quintains emerged. First, participants in the higher technology quintain reported spending much more time engaged with technology than members of the lower technology quintain. While lower technology participants described being online at home engaged in informal learning intermittently and for a just a few hours each week, higher technology participants reported spending time almost every day using technology to learn about their professions and connect with colleagues.

Another distinction between the quintains was that, with respect to collaboration, higher technology quintain members reported doing collaborative work within online environments (e.g., wikis and Google Docs), and would likely have worked collaboratively with peers in these environments even more if their peers had been more able and willing to do so. In contrast, lower technology quintain members seemed to view online communication tools as tools for sharing ideas for individual work and as tools for scheduling opportunities for face-to-face collaboration, but did not actually work on shared products or resources within the online environment. Therefore, if a defining characteristic of a community of practice is that members work collaboratively to develop shared resources and products, it could be said that members of the
high technology quintain could potentially be members of true communities of practices that interact exclusively online, whereas it is not clear this is the case for members of the lower technology quintain.

A final distinction between the quintains was that the members of the higher technology quintain clearly saw themselves as providing leadership as a member of a team, with technology helping them do that by providing an ability to have frequent contact with colleagues within their districts, and with two reporting that technology played a role in facilitating their leadership roles in regional and statewide organizations. Their interview responses gave the impression of their having been engaged in running conversations and iterative explorations of options with their colleagues. In their descriptions of the issues they confronted, it was also clear that, through this process, others in their districts had become true stakeholders in the ultimate outcome of the issue where the coordinator was providing leadership. This sense of collaboration was much less clear in the lower technology quintain. In both cases, some information did flow online, mainly through email. However, in Lara’s case, it seemed that the real collaborative work was being done during face-to-face meetings, with online communication being used mainly to coordinate these in-person gatherings. In Bev’s case, her interview responses almost suggested a sense of isolation from her district colleagues, with her shouldering most of the responsibility for exploring options with only snippets of information from others.

Summary of Findings by Research Question

Research Question One: What Sources of Information and Expertise Do Gifted Coordinators Access to Guide Key Decisions Related to Their Professional Positions?

Naturally, the sources of information and expertise a gifted coordinator accesses to inform a decision about a particular issue will be influenced by the nature of that issue (as will be
discussed in the conclusions to research question two.) Overall, however, there were a few information sources that were commonly accessed. These included stores of local student data, viewpoints of intradistrict stakeholders, external “benchmarking” data, viewpoints of gifted education experts, and state policies and guidance documents.

All five case study participants made mentions of accessing internal district databases to analyze the issues discussed in their interviews. All five mentioned exploring data related to the number and grade levels of students identified as gifted in at least one category. Additionally, three of the five mentioned exploring at least one set of data in an electronic spreadsheet or database related to student achievement or academic growth.

A second common source of information accessed was the viewpoints of gifted education stakeholders within one’s own school district. In all five case studies, participants mentioned consulting with other district employees or contractors. For example, Steven sought input from a school psychologist retained by his district, Megan reached out to other local gifted education staff members and to the science faculty in her district, Lara was working directly with central office administrators and building principals and serving as a liaison to regular education teachers, Carly described working with her district’s curriculum director, and Bev explored options with the middle school principal and academic department heads. Additionally, on the survey, 31% of participants mentioned conducting online surveys to gather feedback from teachers and parents to assist with program planning and/or evaluation.

Third, many coordinators mentioned looking to other school districts as models or sources of information. Three of the five case study participants made mention of looking at the gifted education service models of similar districts. For instance, Carly researched other school district’s gifted service models and math achievement data, and Megan contacted other school
districts in search of information about their approaches to serving students identified as gifted in science. Additionally, five survey participants mentioned having visited other district’s websites. For example, one mentioned researching how other districts phrased policy language, three mentioned researching what forms of gifted services other districts offered, and one mentioned looking up information about how other districts screened and assessed students for gifted identification.

A fourth commonly mentioned information source was the knowledge of gifted education experts. For example, Steven described accessing publications related to assessment, Megan mentioned position papers from the National Association for Gifted Children as being influential in her work, and Carly searched for best practice resources on math instruction. Sometimes, this expertise was accessed through publications and websites. In some cases, however, expertise was accessed through direct contacts. For example, Carly mentioned periodically calling a former professor who is nationally known in the field of gifted education, and Megan mentioned calling state gifted education consultants and respected gifted coordinators in other districts for feedback and suggestions. Additionally, all five mentioned accessing information and advice from gifted coordinators in other districts as primary motivators for their participation in regional gifted coordinators’ organizations.

*Research Question Two: How Do Gifted Education Leaders Use the Internet (If At All) in Accessing Information and Expertise to Inform Their Practice and Decision Making?*

Some of the types of information gifted coordinators access online were described in the discussion around question two. However, how gifted education leaders access the Internet bears some further exploration. First, *where* gifted education leaders use the Internet is an interesting issue in itself. One finding that emerged from the interviews was that gifted education leaders are
cultivating their expertise off the clock and away from school. All five coordinators interviewed mentioned that, at least on occasion, they go online at home to find information and ideas for use in their professional roles. The only difference on this issue between the lower technology quintain and the higher technology quintain was that the coordinators in the lower technology quintain went online to access information or expertise related to their professional roles less often. Bev mentioned going online “once in awhile,” while Lara estimated she spent between 90 minutes and two hours each week engaged in informal learning online away from school. In contrast, Megan from the higher technology quintain mentioned researching issues or looking for resources “almost every night,” Carly utilized the Web “all the time” for professional purposes, and Steven indicated that he was researching something “almost every day” related to his interests in education and technology. Additionally, having access to the Web on a mobile device also seemed to impact how gifted coordinators used the Web. Again, Megan and Steven mentioned using their mobile devices to find resources while away from their offices. Additionally, Megan used her laptop and smart phone to access input and information from her peers as she moved from class to class and school to school within her district. (It is not clear whether Megan consulted with her colleagues so frequently because she was still relatively new in her role or because doing so reflects her style of leadership. Whichever the cause, this would not be possible without her mobile devices.) Lara even opened her laptop during her interview to verify that she was relaying accurate information.

Another area where behavior among coordinators varied in regard to how they used the Internet was that, beyond e-mail, some coordinators only searched and surfed the Internet, making use of information that was there for the finding, whereas the gifted coordinators from the higher technology group actively prodded the Web, reaching out to the creators of online
content, participating in online forums, asking for ideas via microblogging networks like Twitter, and sharing back their own ideas and resources via blogs, wikis, and personal webpages. For all the participants, the Internet was a *source of information*, but for some, it was also a *medium for conversation*.

Finally, the three gifted coordinators from the higher technology group were all active curators of streams of information relevant to their professional practice. All three mentioned subscribing to feeds or “following” people or groups on social sites who often share ideas and resources relevant to their professional roles. This is an important distinction, as one can only search for information about a topic about which one is already at least somewhat aware, whereas having a “personal learning network” provides a kind of professional antennae array that picks up information that is useful but was not specifically sought after. It may be that having such a network provides reinforcement for accessing the Web frequently to see if the network has scooped up anything new and useful, just as many people check their e-mail obsessively because, sometimes, the inbox contains an important or valued message.

*Research Question Three: What Personal and Workplace Factors Affect the Manner and Extent to Which Gifted Education Leaders Use the Internet in Their Professional Practice Related to Informed Leadership and Decision Making?*

Survey and interview data suggest that the personal factors affecting how gifted coordinators use the Internet in their professional practice include technology skills, technology self-efficacy, and coordinators’ perceptions of the Web. These results may be unsurprising. However, a few interesting patterns were found. One was that all case study participants saw the Internet as a source of information and, to some extent, as a medium of communication (at least through e-mail). However, the case study participants from the higher technology quintain also
saw the Internet as a medium for collaboration. For example, Steven described pushing for his regional gifted coordinators group to adopt Google Docs to allow them to work together at a distance to create resources and model policies, Carly talked about creating wikis to allow her colleagues to share and discuss data and collaborate on possible curriculum and program changes, and Megan talked about the value of having WEPs online so that she could work collaboratively with teachers to develop and update them, and used a variety of online tools to stay in contact with teachers and administrators throughout the day.

Additionally, while all participants were “consumers” of online information, the case study participants in the higher technology quintain were also online content creators. Steven, for example, shared podcasts and presentations online, Megan has a personal blog and “tweets” about gifted education issues, and, as previously mentioned, Carly creates and manages wikis for professional organizations in which she is active where she curates resources for her peers.

Regarding the workplace factors that influence how gifted education leaders use the Internet, four themes emerged:

- The availability of technology influences use matters.
- The availability of training and support for mastering new tools influences use matters.
- An individual’s use of collaborative online tools is influenced by peers’ adoption of these tools.
- Organizational cultures that emphasize data-driven decision-making appear to influence gifted coordinators’ use of online tools.

First, and perhaps obviously, educators do not use tools they do not have. Notably, two of the case study participants brought up the fact that their use of Internet tools to communicate
with peers and experts had increased after they were provided with laptop computers they could take home and around their districts. Additionally, Megan mentioned that she was also communicating more frequently with teachers after all were provided with computers, and that she had more direct contact with students (as an administrator) after all students were given e-mail accounts and many were equipped with iPod Touches or iPads after the district received a technology grant. Carly also argued that her district’s recent efforts to better equip staff and students with technology had influenced her technology use. Specifically, she described how her district had made a strategic decision not to use new income from a sales tax passed to provide funding for school district capital expenditures to build or upgrade buildings as other districts in her area had done. Instead, her district used the new revenue to buy hundreds of laptops and iPads. This has enabled her to use collaborative tools like Google Docs and wikis with her colleagues, and has also accelerated a move to all-electronic record keeping, increasing the amount and variety of data she has available to inform her work.

However, the perceived level of support also appears to be an important factor beyond simple access to Web enabled devices. Statistically significant (p<.05) correlations were found in the survey data between subscores on perceived levels of technology support and subscores on technology skills ($r = 0.68$), technology self-efficacy ($r = 0.47$), and perceived benefits of technology ($r = 0.85$). The overall survey data was also reflected in individual interviews. For example, Megan mentioned that district-wide training in using Google enterprise services had been important in increasing use by teachers and students. A lack of leadership and support was also mentioned as a contributing factor to non-use of technology. Again, Steven mentioned that the fact that members of his regional coordinator group did not have the skills needed to use collaborative tools was a limiting factor. Lara, from the lower technology quintain, also seemed
to indicate that she was willing to make greater use of technology after training, noting that she was looking forward to upcoming professional development to increase her skills using an interactive whiteboard.

Third, the data also suggest that an individual’s use of online communication and collaboration tools is influenced by the use (or lack of use) on the part of his or her peers. It may be obvious, but nonetheless worth noting, that a medium of communication is only valuable if others are using it, and one can only use a tool to collaborate if others use it as well. An individual wanting to use a communication or collaboration platform is dependent on others buying in before that platform can become truly useful. For example, Google Docs offered the same set of features to all the case study participants, and both Steven and Megan expressed an affinity for the online productivity suite. However, Megan spoke of using it extensively to work with her colleagues, while Steven complained on wanting to use it with his gifted education peers but not being able to do so. In practice, the difference between the two scenarios is that the leadership of Megan’s district trained everyone to use it and committed to using it in their own work. On the other hand, because Steven was not in a position to ensure everyone in the regional coordinator group was trained and had little leverage to get others to try to software, his effort was unsuccessful. As Carly pointed out about the same group, “We keep using (e-mail) because everyone is in that habit and everyone knows how to send e-mail.” Similarly, 89% of participants used Facebook at home, likely influenced by its near ubiquity. For example, Bev from the lower technology quintain unenthusiastically mentioned using Facebook (and no other online service mentioned in the survey) at home because she did not want to feel disconnected from her children. Her children’s commitment to Facebook was a causal factor in her own adoption of it.
A fourth factor that seemed to influence how gifted coordinators used technology and online tools was the degree to which their schools had data-driven cultures. Megan and Carly from the higher technology quintain talked at length about their district’s use of data related to academic achievement and growth in their interviews. In Carly’s case, virtually all interactions with her local colleagues about the issue she described revolved in some way around data, with the need to find, interpret, discuss, or apply data driving almost all the interactions in her scenario. For example, her work with the district assessment coordinator sprung from her desire to understand the degree to which various achievement tests aligned with one another. Her work with the curriculum director focused on professional development related to using a state website with data analysis tools for exploring academic growth. Even her conversations with teachers hinged on exploring data together looking for connections between student learning experiences and student outcomes. Megan also talked about interest in data-driven decision making as a driver for technology adoption in her district, noting that the desire to acquire the ability to connect the services students received with the assessment outcomes they achieved in a unified data system was a factor in getting support for moving the development and management of WEPs in her district from paper to a network database. In Lara’s case, her district’s focus on data was becoming a driver in her own technology use. She mentioned joining LinkedIn because the chair of the committee in her scenario announced that they would be using that network to share information and communicate as a group between meetings.

Discussion

Based on the data from the survey and interviews, the following key findings emerged upon analysis. First, all participants expressed seeing potential in the Internet as a source of informal learning and resource for professional practice. Second, despite the universal
recognition of the potential of the Internet as a resource for informal learning and resource for professional practice, a great deal of variability was found among gifted coordinators with respect to their current levels of ability to realize the potential of the Internet as a resource, their senses of self-efficacy related to learning to use new technology, and their perceptions regarding the availability of support to help them do so. Third, the degree to which one’s peers and colleagues have adopted online tools for learning and collaboration appears to affect one’s own use of those tools. Additionally, increased use of online tools for collecting and analyzing data was found in school systems that emphasize research-based practice and data-driven decision making. Fourth, access to mobile Internet devices appears to be associated with increased use of the Internet as a resource for informal professional learning and professional collaboration. Fifth, gifted coordinators in organizations where leaders have a clear vision for the use of technology and who ensure access to hardware, software, training and support are more likely to feel proficient in using technology and are more likely to actually use online tools extensively in their own learning and practice.

An overarching finding of this study is that, while isolated individuals can find value in the Web as a tool for self-directed informal learning, the emergence of a true online community of practice requires leadership and a clear sense of shared purpose. This chapter will explore the implications of this finding and others discussed in Chapter IV through the “lenses” of gifted education, school leadership, and learning design, and conclude with recommendations for cultivating an online community of practice in gifted education and ideas for future research.

Lurkers and Leaders

It is clear from the survey responses that nearly all gifted coordinators were using the Web as a resource for informing professional practice. However, prior to the survey, it would be
easy to assume that this is not the case because the majority of gifted coordinators participating in the study mentioned using the Web in ways that leave few visible traces. For example, many gifted coordinators reported visiting other school districts’ websites to find information about their assessment practices, gifted education service models, etc. However, for the most part, the gifted educators in the districts whose resources were accessed were unaware that other coordinators were engaged with their materials. This behavior, in the context of online communities, is sometimes referred to as “lurking” (Catarci, 2005). Lurkers may benefit from accessing resources created by the community, but do not actively reciprocate by providing feedback or sharing their own resources.

Another conceptually similar phrase for this behavior with a less negative connotation is “legitimate peripheral participation” (Lave, 1991). Lave describes a developmental progression related to an individual’s activity in a community of practice. In his model, most novices typically begin at the periphery of a group, mostly or entirely observing and keeping a low profile. Lave’s model suggests that, as an individual becomes more familiar with the norms of a community and feels increasingly confident in his or her competence in the topics addressed by the community, he or she will become increasingly active. At first, this may involve activities like asking a question or voicing agreement with another member of the community. Later, a member may begin contributing his or her own ideas or products. As the member’s confidence continues to grow, he or she may also begin mentoring newer members and inviting others. Finally, as the member becomes highly experienced and respected within the community, he or she may take on a leadership role and help to set the agenda for the group and enforce acceptable norms of behavior.
In this study, there were signs that this phenomenon may be present in the loose online connections among the state’s gifted education coordinators. As Table 11 shows, the typical gifted coordinator surveyed was using the Internet several times per month to gather information online, but was posting information accessible to others much less frequently – typically, just a few times per semester. Further, 20% of participants reported never posting program information online, compared to 8.6% reported posting information several times per week.

Table 7

*Selected “Frequency of Use” Item Ratings*

<table>
<thead>
<tr>
<th>Task</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use the Internet to gather information for curriculum design/planning</td>
<td>3.29</td>
<td>0.93</td>
</tr>
<tr>
<td>Post program information on an electronic bulletin board, website, or blog</td>
<td>1.97</td>
<td>1.31</td>
</tr>
</tbody>
</table>

Frequency of posting ratings were moderately correlated ($r = 0.41, p < .05$) with participants’ technology self-efficacy subscores, lending support to the notion that more confident technology users are more likely to actively share information online while less confident users are more likely to lurk or participate on the periphery. This pattern also appears to carry over into participants’ personal use of the Web. For example, participants’ frequency of posting program information online was strongly correlated with the number of different online services participants reported using at home ($r = 0.50, p < .05$) out of a list that included social networking sites, personal blogging site, microblogging service, and personalized start page.

Therefore, it seems clear that active contributions to the shared resource pool increase in tandem with gifted coordinators’ comfort levels with technology, and that out-of-school use of
“Web 2.0” is associated with increased sharing of resources online in gifted coordinators’ professional roles. Further, a weak negative correlation ($r = -0.08$) was found between total years of experience as a gifted coordinator and frequency at which a coordinator posts resources online. This may be related to a relative lack of experience sharing online outside of school among older computer users overall, although adoption of social networks among Americans over 40 is growing rapidly (Pew Research Center, 2011). Creating welcoming online spaces and providing guided experiences to help online novices become comfortable sharing and communicating online may be key to moving many of the state’s gifted coordinators from being lurkers and peripheral participants to being active contributors to the state’s online gifted education community and being visible leaders among their local colleagues who have more fully embraced online tools for communication and collaboration.

Another key element of the communities of practice concept, however, is that members of the community see themselves as having similar roles and shared work (Wenger, McDermott, & Snyder, 2004). There were some hints in the interview data that gifted coordinators may not necessarily see themselves as having the same roles as their peers or having shared work to do to the extent assumed at the outset of this study. For example, during her interview, Megan mentioned that, at times during the last year, she had hesitated to raise issues relevant to her district at meetings of her regional gifted coordinator group because she thought her district, which is less dependent on state funding than most other districts in her region, was seen by her peers as being very different from theirs. Therefore, she assumed others would not be interested in discussing the issues about which she was concerned, and that raising them might be offensive to other gifted coordinators in districts dealing with severe spending cuts. Similarly, Steven mentioned perceiving that some gifted coordinators in his area went to their regional group
meetings to get information that was of mutual interest, but that commitments to actually working together waxed and waned. The fact that so many coordinators were quietly researching their peers’ programs online, however, suggests that the level of interest in collaboration may be underestimated. Because gifted coordinators who are actively posting information online rarely know when a peer has accessed the information and resources they have shared, they may assume their peers simply have no interest.

**Limitations**

It should be noted that there are a few inherent limitations in this study due to the research design and the nature of the instruments used that readers should bear in mind when considering the implications of this study. First, the study relied on self-reported data from participants. It is not known how accurate participants were in assessing their own technology skills levels since no formal skills assessment was administered. Second, because the interviews were designed to focus on one specific leadership issue the participants faced, it is possible that their actions and uses of technology related to addressing the issue explored were not typical of their leadership style or technology practices overall. Third, the population studied (gifted coordinators) may have unique characteristics that would limit the generalizability of the findings to other types of school leaders. Additionally, while fairly representative of the state’s population of gifted coordinators overall, the sample was relatively small (n=35). Further, it is the nature of case study research to emphasize illuminating and understanding one or a few cases in detail over developing findings that generalize to larger populations. Further research would be needed to determine whether the practices and experiences of the case study participants in this study were typical. With these limitations in mind, the next section explores potential implications of this research.
Implications

Implications for Gifted Educators

For gifted educators interested in cultivating or participating in an online community of practice (CoP), the findings of this study have a handful of relevant implications. The first of these is that more support is needed to help gifted coordinators develop technology skills needed to become confident and competent users of online collaboration tools. The state’s gifted education association or the regional coordinator groups could play an important role in addressing this need by making the development of gifted coordinators’ technology skills a focus of the professional development programs they offer, as gifted coordinators are already accustomed to participating in professional development activities organized by these groups, and as many online communities of practice spring from natural offline professional connections.

A second, but related, implication of this study is that gifted educators should focus their efforts in building online communities of practice around projects known to be of high interest to significant numbers of coordinators around the state. As previously discussed, it may not be safe to assume that gifted coordinators always recognize their peers as having overlapping needs and interests around which to base collaboration. It may be necessary to either focus early community building efforts around issues known to be of universal concern, or to be explicit about how the issue to be addressed cuts across districts with very different needs, resources, and demographics.

One striking feature of the local communities of practice described by the interview participants was that they all revolved around a very specific need or concern, and that they all seemed to revolve to at least some extent around interpreting and then taking action around data. While learning was an important purpose of all the CoPs, consistent with adult learning theory
(Knowles, Holton, & Swanson, 2005), participants always pursued knowledge because they perceived it to be relevant to the issue at hand, sharing their own relevant knowledge with other members of the CoP and looking outside the district to fill the gaps, check assumptions, and look for practical models.

The fact that, at least among case study participants, it seemed easier to quickly develop an active CoP within a district than to sustain collaboration among gifted coordinators across districts reflects a challenge cross-organizational CoPs often face, which Wenger (1998) termed “local-global duality.” The local-global duality concerns how one CoP relates to another. The challenge is to adapt local knowledge created around the needs of the local organization to be relevant to a CoP that has members drawn from multiple organizations (in this case, school districts), and vice-versa. Wenger argues that overlapping CoPs need “boundary objects” that are understood and useful to the overlapping groups (e.g., school districts and gifted coordinator organizations), which would allow gifted coordinators to be “boundary brokers,” moving fluidly between district-based CoPs and regional or statewide CoPs comprised of gifted educators, adding and deriving value from both communities.

Therefore, in addition to helping each other develop their technology skills, gifted coordinators should also work together to identify common priorities and to build shared data sets, or at least work toward capturing data in systems that are compatible with one another. In Carly’s example, shared concern about improving math achievement outcomes gave her a common purpose in league with other administrators and teachers, and the value added data gave all participants a shared focus and common information set to work with that helped bring them together despite their different backgrounds and roles within the district. Similarly, Megan noted that her district had been working hard to digitize all of its gifted education records and to
integrate gifted education data into its overall data system so that gifted education issues could be explored in a contextualized way, linking together with all kinds of information the district collects about students. Currently, the state is in the process of developing a gifted education “performance indicator” as a measure of how effectively districts are meeting the need of gifted students. This seems like a rare opportunity for gifted coordinators to come together around a universal issue (as the performance indicator will apply to all school districts), collaboratively explore existing data, and collaboratively develop aligned systems for collecting and sharing data across systems.

Implications for School Leaders

One encouraging finding of this study was that there was near universal consensus that the Web is a potentially powerful platform for informal learning and collaboration. Even the participants interviewed from the lower technology quintain described using the Web for research and learning and expressed desires to increase their technology skills. A key implication for senior school leaders, therefore, is that educators (including “veteran” educators) may be less resistant to embracing technology than has previously been assumed.

A second, and important, finding is that vision on the part of senior school leaders related to technology integration influences gifted coordinators’ technology practices and attitudes. Specifically, the degree to which gifted coordinators agreed with the statement, “A vision for technology use in my district or ESC is clearly communicated to educators,” was correlated ($r = 0.29$) with coordinators’ beliefs that “technology can be an effective professional learning tool for educators, and with coordinators’ agreement with the statement ($r = 0.29$) that “computer technology allows me to create materials that enhance my work as a gifted coordinator.” Thus, if senior school leaders want gifted coordinators to embrace technology as both a medium for
learning and as a tool for enhancing their effectiveness, it would be wise for them to invest time in articulating the role they envision technology playing within their districts. Further, given the influence perceived attitudes toward technology on the part of school leaders seems to have on the attitudes of gifted coordinators, if gifted coordinators are perceived by school leaders as being resistant to embracing technology, a first step toward addressing this resistance may be to look in the mirror and reflect on one’s own use of technology in professional practice and whether there is clarity about the role of technology within the school district.

School leaders should also be aware that there maybe a minimum “critical mass” of technology adopters that must be present before a sense of online community is established. It takes a village to make a village. Two of the three case study participants from the high scorer group on the adapted TTIS mentioned seeing additional ways that technology could help them work more collaboratively with other gifted coordinators and local peers, but not being able to do so because others were not ready to embrace the tools. For example, Steven mentioned volunteering to set up a shared GoogleDocs repository for use by gifted coordinators in his region, but not getting encouragement from the leader of his regional coordinator group. (Unbeknownst to him, the leader he mentioned also participated in the survey portion of the study and in fact scored one standard deviation below the mean of the sample on the subscore related to beliefs and attitudes about technology.)

Carly also suggested in her interview that the career stages of some coordinators in her area could be an issue. She commented that some coordinators with more basic technology skills who are nearing retirement did not want to invest the time and effort needed to develop new skills that would enable them to work more collaboratively with other coordinators with only a year or two remaining before retirement. However, she also noted that there were exceptions,
and mentioned Steven by name as an example of someone retiring who enthusiastically
promoted technology use and even volunteered to provide training to other gifted coordinators in
their region.

To launch inclusive communities of practice, schools and educational organizations
likely need to be prepared to provide targeted training and support for a subset of potential
participants. Only six out of 35 participants strongly agreed with the statement, “I am confident
in trying to learn new technologies on my own,” and only seven strongly agreed with the
statement, “support is available in my district or ESC to assist with technology integration
ideas.” While there was near unanimous agreement among participants that technology could be
a powerful tool for supporting professional learning and improving professional practice, it is
clear that a significant percentage of gifted coordinators are not confident enough in their own
technology skills to take the lead in incorporating new tools into the operation of district gifted
education services without encouragement and a safety net of support from others.

Another implication of the findings for school leaders is that providing access to portable
devices for accessing the Web seems to be an important factor in leading gifted coordinators to
embrace the Web in their informal learning and professional practice. Among case study
participants, all “higher technology” quintain participants used *multiple* mobile devices capable
of accessing the Internet. Megan, from the higher technology quintain, specifically mentioned
that being able to connect with peers and district resources from anywhere made her feel more
connected to her colleagues within the district. Not only did the devices help keep her in touch
with colleagues *not* in close physical proximity, they also made her feel freer to leave her desk to
talk to teachers face-to-face and have more direct contact with students without worrying that she
would be inaccessible should an important issue emerge elsewhere in the district. In the lower
technology quintain, Lara’s comments also suggested that having a new laptop was influencing her practice, most notably by removing a barrier to accessing student data to inform decisions and increasing the amount of time each week she was engaging in informal learning online.

Notably, two items on the survey asked participants for information regarding their use of technology outside of school. The first focused on hardware through which the Internet could be accessed. All 35 participants reported using at least one Internet accessible device at home, and 30 reporting using more than one device, with 32 of 35 participants using multiple portable devices. By comparison, according to a May 2011 survey conducted by the Pew Research Center, 57% of American adults owned a desktop computer, 56% owned a laptop, and 20% owned a tablet computer or e-Book reader (Pew Research Center, 2011). This suggests that, outside of school, gifted coordinators as a group are significantly ahead of the population curve with respect to device adoption and have ready access to the Web both at home and many have access on the go. Thus, Internet access does not appear to be a barrier to the potential use of the Web as a tool for informal learning and collaboration away from school. Therefore, school leaders, especially those in schools with limited technology resources, should consider exploring ways to leverage technology that coordinators have at home in professional learning. For example, districts could explore granting continuing education units needed for maintaining licensure for online learning experiences as well as those that take place in traditional formal settings during regular business hours. Already, high school students in the state can earn credits toward graduation through demonstrations of learning rather than through completion of classroom contact hours. Perhaps a similar arrangement could be explored for learning on the part of teachers and administrators as well as the students they serve.
However, while providing access to portable hardware appears to be important, by itself, having access to a mobile Internet device does not appear to be sufficient. Providing support for technology integration in professional practice also appeared to be critically important, mirroring findings by other researchers (Straub, 2009). Further, school leaders should not mistake employing technicians who keep computers and networks operating for proving support for technology integration. While none of the case study participants raised concerns about having access to reliable hardware and networks, they expressed differing views about the level of support available for leveraging technology to work smarter and more efficiently. For example, Megan and Carly spoke of the importance of having gifted education-related data integrated with the overall student information system in enabling their work related to the issues they described, as well as making information about the needs of services prescribed for gifted students readily available to regular teachers and gifted intervention specialists. Accomplishing this level of integration is beyond the capacity and authority of most gifted coordinators, so support from district leadership is key.

**Implications for Designing for Community**

When working within his or her own school district, gifted educators from the “higher technology” quintain were able to leverage a variety of collaborative platforms (e.g., Google Docs, Wikis, etc.) in collaborating and sharing information with their colleagues because senior leaders in those organizations lended their support and there was group commitment to embracing those tools. However, when the higher technology coordinators turned to work with their gifted education colleagues from other school districts through their regional coordinator organizations, it appeared that the lowest common technology denominator prevailed. For example, both Steven and Carly described the failure of technology savvy gifted coordinators to
get their regional gifted coordinators’ organization to adopt tools like Google Docs that would let them work collaboratively. Because the leadership of that group was not ready to embrace those tools, the organization continues to get by relying on e-mail, which Steven noted allows the group to coordinate basics like scheduling meetings, but does not enable the organization’s members to work together as a group developing resources, model policies, etc., outside of face-to-face meetings.

In communities of practice that cut across school districts and rely on “coalitions of the willing” coming together to collaborate, would-be community leaders would do well to consider the technology skill levels of members prior to making choices of platforms for sharing ideas and working collaboratively. At present, it appears that basic competence at using e-mail is near universal among gifted coordinators, making its use a safe, and therefore default choice. However, because of the limitations of e-mail described by members of the higher technology quintain to support ongoing collaborative work, community leaders must encourage and support community members in adopting tools that better facilitate multi-party communication and group collaboration online.

Social networking platforms may be an emerging viable alternative to total reliance on e-mail. While only one case study participant mentioned the use of a social network in his or her drawing task, experience participating in a social network appears to be approaching universal among gifted coordinators. 89% of survey participants reported using a social networking service at home. While participants were not asked to specify which social networks they accessed, given the fact that nearly 2/3 of American adults are now Facebook users (Madden & Zickuhr, 2011), it is likely that a substantial portion of gifted coordinators are on Facebook. Both members of the lower technology quintain interviewed for this study had Facebook accounts, and
other studies (e.g., Rutherford, 2010) have found the social network to be a useful platform for informal professional development among teachers. Therefore, it stands to reason that online communities of practice could safely use platforms with interfaces similar to Facebook without exceeding the technology skill levels of all but a few gifted coordinators.

Perhaps most importantly, designers of systems intended to support communities of practice in gifted education should bear in mind that the element that appeared to bring and hold together the communities of practices described in the interviews and gave them focus was concern for the work itself. Therefore, purpose should remain central to thinking about designing platforms to support communities of practice. Consistent with andragogical principles (Knowles, Holton & Swanson, 2005), professional development resources delivered through a system design to support communities of practice may be most useful if clearly linked to the purpose of the community, ideally with specific resources being surfaced as contextually appropriate on an as-needed basis, being highlighted just as participants encounter needs for them as they work through authentic school problems, issues, and goals.

Another design element to consider is porosity. None of the communities of practice described in interviews with case study participants were comprised exclusively of gifted educators. There is a clear need for isolated gifted coordinators to be able to better connect and collaborate with their role peers in other schools, and the fact that gifted coordinators are also leaders in their own school systems, advising and serving a diverse set of local stakeholders, should not be forgotten. Therefore, an online platform designed to support both learning and productive work needs to allow flexibility in controlling access so that gifted coordinators can bring their local colleagues serving in other positions into the space. Further, because the survey showed that gifted coordinators are accessing the Web using a diverse set of devices and using a
variety of software applications and online services (which they do not always get to choose),
designers should take pains to ensure the systems they create depend on established standards for
interoperability, and should encourage individual users to make use of common file formats
when sharing resources with colleagues and peers.

_Falling Barriers_

It appeared that few participants were engaged members of true online communities of
practice, but several findings suggest there is still reason to be optimistic about the potential of
this model for supporting professional learning and collaboration.

First, virtually all participants, even those currently on the low end of the subscore
distributions related to technology use and self-efficacy, indicated seeing potential in the Internet
as a tool for supporting professional learning. The mean level of agreement with the statement
“technology can be an effective professional learning tool for educators” was 3.83 on a four-
point scale.

Second, access to devices needed to facilitate engagement with online communities and
resources is almost universal. All participants reported using at least some online communication
and collaboration tools at work, and all participants also reported having at least one computer or
mobile Internet device at home. This may be an important factor, as some case study participants
reported doing much of their research and informal professional learning at home in the evenings
and during school breaks.

Additionally, the vast majority (94%) of participants indicated having at least one _mobile_
device (either a laptop, tablet, or smart phone or a combination of these). This is important, as it
increases the potential for participants to connect and interact with online communities of
practice on an ongoing basis. _Ongoing_ interaction is a defining characteristic of communities of
practice; so the more convenient it is for members to connect to the community, the better. It is perhaps worth noting that all the major social networking platforms (e.g., Facebook, Google+, LinkedIn, Twitter, etc.) have developed dedicated applications for mobile device platforms such as Android and iOS with user interfaces tailored to the form factors of mobile devices. According to Facebook, over 350 million users now access Facebook from a mobile device (Facebook, 2011). Some of these platform providers have even added location-based features that support augmenting traditional professional development experiences with online networking. For example, it is now common for attendees of conferences to use Twitter for backchannel communications to give feedback to speakers and connect with other attendees.

Conclusion

With wireless networks approaching ubiquity, hardware costs declining, and collaboration platforms becoming both free and user-friendly, the barriers to leveraging the Web as a powerful resource for informal learning, shared work and distributed leadership are no longer primarily technological in nature. Rather, the challenges now are mainly matters of design and habit. Linked leaders in gifted education must learn to conduct their practice with sharing in mind. They and senior school leaders must commit to supporting connecting previously isolated systems. They must model embracing technology, and, as importantly, model drawing on data and distributed sources of expertise to make smarter decisions, as informed decision making on behalf of students is, fundamentally, the purpose of information technology in educational leadership.

Future research, therefore, should focus primarily on the human side of the equation. Specifically, an exploration of how senior school leaders create the conditions in which others perceive a sense of vision and support for using technology to enhance education is warranted.
Additional research on how the “early adopter” technology users in the higher technology quintain developed their relatively advanced skills and positive attitudes on their own may also be helpful in identifying tools and strategies that could be useful to others in contexts where technology leadership and support is lacking. It may also be useful to explore how the nature of the issue to be addressed influences the development of communities of practice so that online productivity and collaboration tools can be designed around their users and their work.

It is clear from this study that many gifted coordinators have yet to even recognize the true potential of technology to enhance their capacities for leadership. It is equally clear that even today’s leaders in leveraging technology to lead more effectively are just beginning to explore the potential of social and collaborative platforms for enhancing informal learning, strengthening education as a profession, and, ultimately, creating smarter, more effective learning environments for students. However, it also shows that, given the right tools, attitudes, and support, gifted coordinators equipped with well-developed technology skills and passions for their fields can and do link, learn, and lead innovation.
REFERENCES


http://it.coe.uga.edu/itforum/paper92/paper92.html


http://www.cosn.org/Portals/7/docs/Web%202.0/CoSN%20Report%20042809Final%20w-cover.pdf


Ohio Department of Education. (2005). I-GET-GTed: Improving Gifted Education by Teaching Groups of Trainers and Educators. Grant Application, Columbus, OH.


http://elearnspace.org/Articles/connectivism.htm


Informed Consent for Gifted Coordinators and Gifted Supervisors

Introduction: This survey is part of a dissertation research project being undertaken by Eric Calvert, a doctoral candidate in the Leadership Studies program at Bowling Green State University (BGSU) under the supervision of Dr. Terry Herman of the BGSU College of Technology. The research study explores how leaders in gifted education use technology to learn and access information for use in their professional leadership roles. You are being asked to participate in this study because of your professional role as a gifted coordinator or gifted supervisor and are being contacted through the Ohio Association for Gifted Children or one of its regional affiliates.

Purpose: The purpose of this study is to develop a greater understanding of the role technology plays in facilitating informal professional learning and informing professional decision-making. It is hoped that the overall benefits of this research will include contributing to developing more useful professional development tools and resources and the development and support of professional communities of practice. However, there are no immediate and direct benefits for participants.

Procedure: The research will be conducted in two phases. The first phase involves completing a survey adapted from the Teacher Technology Integration Scale on how participants use and feel about technology in their professional roles. This survey should take approximately 15 minutes to complete. A small number of participants who complete the survey will be invited to participate in a follow-up interview lasting approximately one hour which will explore what, if any, role technology played in informing a significant professional decision or policy recommendation.

Voluntary nature: Your participation is completely voluntary. You are free to withdraw at any time. You may decide to skip questions (or not do a particular task) or discontinue participation at any time without penalty. Deciding to participate or not will not affect your relationship with Bowling Green State University or OAGC.

Confidentiality/Anonymity Protection: The identities of participants will be kept confidential. However, if you complete the survey in a group setting, others in the room may be aware of your participation although they will not have access to your responses unless you voluntarily disclose them. Individually identifiable information (such as your name) will be used for contact purposes only. If you participate in a follow-up interview, the interview will occur at a location that you feel is sufficiently private. When research results are reported, no actual names of participants will be used.

All completed paper surveys and other written records will be stored in a locked file cabinet until the study is completed, at which time they will be shredded. Survey results will be transcribed and stored in an electronic database on a password protected server using industry standard access controls.
**Risks:** The risks related to participating in this study are believed to be minimal and are similar to risks associated with participating in other survey research. The primary risk associated with this study is potential disclosure of your responses should confidentiality be breached. The researcher will take steps to minimize this risk, such as keeping data stored securely, using pseudonyms when discussing responses with advisers and when reporting data, and by destroying files that include individually identifiable information as soon as the data contained within them is analyzed.

**Contact information:** If you have questions about this study, you may contact the researcher, Eric Calvert, by email at ecalvert1@gmail.com or by phone at 614.859.9192. You may also contact Dr. Terry Herman, the dissertation research chairperson for this study, by email at hermant@bgsu.edu or by phone at 419.372.7265. You may also contact the Chair, Human Subjects Review Board at 419.372.7716 or hsrb@bgsu.edu if you have any questions about your rights as a participant in this research.

Thank you for your time and consideration of participating in this study.

I have been informed of the purposes, procedures, risks and benefits of this study. I have had the opportunity to have all my questions answered and I have been informed that my participation is completely voluntary. I agree to participate in this research.

_____________________________________
Participant Signature
September 14, 2011

TO: Eric Calvert
   Lead. Studies / Education

FROM: Hillary Harms, Ph.D.
   HSRB Administrator

RE: HSRB Project No.: H11D293GE7

TITLE: Linked Leadership: The Role of Technology in Gift Education Coordinators’ Approaches to Informed Decision

You have met the conditions for approval for your project involving human subjects. As of September 14, 2011, your project has been granted final approval by the Human Subjects Review Board (HSRB). This approval expires on June 21, 2012. You may proceed with subject recruitment and data collection.

The final approved version of the consent document(s) is attached. Consistent with federal OHRP guidance to IRBs, the consent document(s) bearing the HSRB approval/expiration date stamp is the only valid version and you must use copies of the date-stamped document(s) in obtaining consent from research subjects.

You are responsible to conduct the study as approved by the HSRB and to use only approved forms. If you seek to make any changes in your project activities or procedures, send a request for modifications to the HSRB via this office. Those changes must be approved by the HSRB prior to their implementation.

You have been approved to enroll 100 participants. If you want to enroll additional participants you must seek approval from the HSRB.

Good luck with your work. Let me know if this office or the HSRB can be of assistance as your project proceeds.

Comments/Modifications:
Stamped original consent form is coming to you via campus mail. Please add text equivalent to the HSRB approval/expiration date stamp to the “footer” area of the electronic consent form (see attached for specific text).

c: Dr. Terry Herman

Research Category: EXPEDITED #7
APPENDIX C: SURVEY

Gifted Coordinator Technology Integration Survey

Part 1: Perceived Skills

Please check (✓) the box that best reflects your skill competency. Use the scale below to determine your response.

1 = I can’t do this
2 = I can do this with some assistance
3 = I can do this independently
4 = I can teach others how to do this

<table>
<thead>
<tr>
<th>Basic Operations</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Create, save, copy &amp; delete files; move or copy files; create folders and move files between folders</td>
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<tr>
<td>2</td>
<td>Print an entire document, selected pages, and/or current page within a document</td>
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<tr>
<td>3</td>
<td>Cut, paste, and copy information within and between documents</td>
<td></td>
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<td>4</td>
<td>Troubleshooting: When my computer freezes or an error message comes up, I can usually fix the problem</td>
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<td>5</td>
<td>Troubleshooting: I know the things to check if my computer doesn’t turn on</td>
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<tr>
<td>6</td>
<td>Viruses: I can use anti-virus software to check my machine for viruses</td>
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<thead>
<tr>
<th>Productivity Software</th>
<th>1</th>
<th>2</th>
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<th>4</th>
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<tbody>
<tr>
<td>7</td>
<td>Word processors: Use word processor functions to format text (colors &amp; styles), check spelling/grammar</td>
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<tr>
<td>8</td>
<td>Word processors: Use advanced features of word processor (headers/footers, tables, insert pictures)</td>
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<tr>
<td>9</td>
<td>Spreadsheets: Use the basic functions of a spreadsheet to create column headings and enter data</td>
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<tr>
<td>10</td>
<td>Spreadsheets: Use advanced features of a spreadsheet (e.g. use formulas, sort data, charts/graphs)</td>
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<tr>
<td>11</td>
<td>Presentation: Create a presentation using predefined templates</td>
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<tr>
<td>12</td>
<td>Presentation: Create a presentation with graphics, transitions, animation, and hyperlinks</td>
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<tr>
<th>Communication</th>
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<th>2</th>
<th>3</th>
<th>4</th>
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<tbody>
<tr>
<td>13</td>
<td>Email: Send, receive, open, and read email</td>
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<tr>
<td>14</td>
<td>Email: Use advanced features of email (e.g. attachments, folders, address books, distribution lists)</td>
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<tr>
<td>15</td>
<td>Discussion Boards: Subscribe, post messages</td>
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<tr>
<th>World Wide Web</th>
<th>1</th>
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<tbody>
<tr>
<td>16</td>
<td>Navigate the WWW using a web browser (e.g. Internet Explorer, Safari, FireFox, Chrome)</td>
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<td>17</td>
<td>Using more advanced features of a web browser (e.g. creating, organizing, and using bookmarks; opening multiple windows; using reload/refresh and stop buttons)</td>
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<td>18</td>
<td>Use a search engine (e.g. Google, Bing, Yahoo) to search for information on the web</td>
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<tr>
<td>19</td>
<td>Use a web authoring tool (e.g. WordPress, Google Sites, Blogger) to create basic web pages</td>
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<td>20</td>
<td>Format web pages using tables, backgrounds, internal and external links</td>
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<tr>
<td>21</td>
<td>Upload web page files to a server</td>
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</table>

Part 2: Attitudes and Beliefs

Please check (✓) the box that best reflects your level of agreement with statement. Use the scale below to determine your response.

SD = Strongly Disagree
D = Disagree
A = Agree
SA = Strongly Agree

<table>
<thead>
<tr>
<th>Comfort</th>
<th>SD</th>
<th>D</th>
<th>A</th>
<th>SA</th>
</tr>
</thead>
<tbody>
<tr>
<td>22</td>
<td>I feel comfortable about my ability to work with computer technologies.</td>
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<tr>
<td>23</td>
<td>Learning new technologies is confusing for me.</td>
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<td>24</td>
<td>I get anxious when using new technologies because I don’t know what to do if something goes wrong.</td>
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<tr>
<td>25</td>
<td>I am confident with my ability to troubleshoot when problems arise while using technology.</td>
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<tr>
<td>26</td>
<td>I am confident in trying to learn new technologies on my own.</td>
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<tr>
<td>27</td>
<td>Learning new technologies that I can use in the classroom is important to me.</td>
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<table>
<thead>
<tr>
<th>Perceived Benefits</th>
<th>SD</th>
<th>D</th>
<th>A</th>
<th>SA</th>
</tr>
</thead>
<tbody>
<tr>
<td>28</td>
<td>Using technology to communicate with others allows me to be more effective in my job.</td>
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<tr>
<td>29</td>
<td>Computer technology allows me to create materials that enhance my work as a gifted coordinator.</td>
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<tr>
<td>30</td>
<td>Computer technologies help me be better organized in my work as a gifted coordinator.</td>
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<tr>
<td>31</td>
<td>Technology can be an effective professional learning tool for educators.</td>
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<tr>
<td>32</td>
<td>My colleagues get excited when they use technology in the professional learning process.</td>
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<table>
<thead>
<tr>
<th>Support</th>
<th>SD</th>
<th>D</th>
<th>A</th>
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<tbody>
<tr>
<td>33</td>
<td>My supervisor encourages staff to integrate technology into education.</td>
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<tr>
<td>34</td>
<td>Technology support is available to me to assist with troubleshooting.</td>
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<tr>
<td>35</td>
<td>A vision for technology use in my district or ESC is clearly communicated to educators.</td>
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<tr>
<td>36</td>
<td>Support is available in my district or ESC to assist with technology integration ideas.</td>
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</table>

Part 3: Frequency of Coordinator Use
Please check (✓) YOUR level of frequency for completing the tasks below. Use the scale below to determine your response.

0 = Never
1 = Once or twice a semester
2 = Several times a semester
3 = Several times in a month
4 = Several times in a week

### Planning & Administration

<table>
<thead>
<tr>
<th>Task</th>
<th>0</th>
<th>1</th>
<th>2</th>
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<th>4</th>
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<tbody>
<tr>
<td>Use the computer to create instructional handouts or assessments</td>
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<tr>
<td>Use the Internet to gather information for curriculum design/planning</td>
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<td>Create electronic templates to guide student computer use</td>
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<td>Prepare or maintain written education plans (WEPs) or written acceleration plans (WAPs) on the computer</td>
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<tr>
<td>Use a handheld device (PDA, smart phone, or tablet device) to organize information</td>
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<td>Use a spreadsheet or database to maintain student records</td>
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### Communication

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<th>Task</th>
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</thead>
<tbody>
<tr>
<td>Use Email to communicate with colleagues in your district or ESC</td>
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<tr>
<td>Use Email to communicate with students or parents</td>
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<tr>
<td>Post program information on an electronic bulletin board, website, or blog</td>
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### Instruction and Professional Development

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<tbody>
<tr>
<td>Use technology to present information to students, colleagues, or other stakeholders</td>
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<td>Demonstrate computer applications</td>
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<td>Provide/create electronic learning centers</td>
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<td>Use technology to adapt an activity to students' individual needs</td>
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### Part 4: Technology and Coordinator Roles

For each item below, please briefly explain how you use Internet tools to help you access data, expert knowledge, or advice you need to perform each common gifted coordinator duty listed. If a duty listed is not part of your current job responsibilities, please write “NA” in the response area for that duty. If a duty listed IS part of your current job responsibility, but you do not use Internet tools to access data, expert knowledge, or advice needed to perform this duty, please write, “no Internet tools used” in the response area for that duty.

50. Assisting in the identification of gifted students

51. Assisting in the placement of gifted students in appropriate educational services and settings

52. Assisting school personnel in the design of gifted education services

53. Consulting with school personnel regarding gifted education issues in district strategy planning process and the development of school improvement plans
54. Assisting school personnel in evaluating the effectiveness of gifted education services

55. Assisting school personnel in developing, appropriately sharing, and maintaining written education plans for gifted students

56. Consulting with school personnel in ensuring district compliance with data reporting and accountability requirements

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<tr>
<th>Background and Demographic Information</th>
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<tbody>
<tr>
<td>Last Name</td>
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<tr>
<td>Telephone Number</td>
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<td>------------------</td>
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<tr>
<td>How many school districts do you CURRENTLY serve as a gifted coordinator?</td>
</tr>
<tr>
<td>Including yourself, how many people are employed at least part time as a gifted coordinator in your district or ESC?</td>
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<tr>
<td>Which of the following types of online services do YOU use at home? (Check all that apply)</td>
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<tr>
<td>Based on their responses, some survey participants may be invited to participate in a follow-up interview lasting approximately one hour scheduled at a time and place convenient for the participant. If asked, how likely would you be to participate in such an interview?</td>
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</table>
APPENDIX D: SEMI-STRUCTURED INTERVIEW GUIDE

1) “Communities of practice” are groups of people who share a concern, a set of problems, or a passion about a topic, and who deepen their knowledge and expertise in this area by interacting on an ongoing basis. Do you feel that you are a member of a community of practice related to gifted education?
   a) Is this community primarily within your district or ESC, primarily outside it, or a combination?
   b) What role, if any, does the Internet play in facilitating your participation in that community?

2) How would you describe how you use the Internet in helping you make informed decisions and recommendations related to your role as a gifted coordinator?

3) What impact do you think the availability of online resources has had on your ability to make good decisions and recommendations in your role as a gifted coordinator? (Follow-up prompt: To what extent has the Internet helped or hurt your ability to make well-informed decisions and recommendations related to your role as a gifted coordinator?)

4) (If applicable) Looking at the online resources you indicated on your drawing as being most important, how did you first learn of this resource? Did this occur in person or online?
   a) If you first met or learned of this resource online, how did you find it? (Search engine? Via a social network? Link from another site or article? E-mail suggestion from a friend or colleague?)

5) (If applicable) Looking at software applications and online tools you indicated you used on your drawing, what factors led you to select these specific tools? (Follow-up prompts if needed: “Because they were available on your computer? Because you are comfortable using
them? Because they are endorsed or supported by your school? Because that's what your source used?”

a) Were there any software applications or online tools you would have liked to have used but could not?

b) If so, what prevented you from using those applications or tools? (Follow-up prompts if needed: Because you didn't have the hardware or software required? Because that source was blocked or filtered at your school? Because you didn't know how to use them? Because others in your community could not or would not use them?)

6) In a typical week, how much time do you think you spend engaged in “informal” learning or discussion related to your role as gifted coordinator? (“Informal” learning is learning that occurs outside a “formal” program such as a university course or planned professional development program or event. It may include things like reading books and articles in print or online, watching/listening to audio and/or video, discussing issues with knowledgeable colleagues in person, online, or over the phone, seeking advice from an expert, etc.)

a) How much of this informal learning would you estimate takes place online?

b) Is the proportion of the informal learning that you do that occurs online increasing, decreasing, or staying about the same?

i) If increasing or decreasing, what factors are driving this (increase or decrease?)

7) When you have a choice between researching or learning about something related to your job online or through another medium (e.g. signing up for a face-to-face workshop or course, looking for a book or journal in a library or bookstore, calling an expert on the phone, etc), under what conditions do you choose to pursue research/learning online?

8) In what ways has your (school district or educational service center) aided and/or inhibited
your ability to use the Internet to inform your decisions and recommendations as a gifted coordinator?

9) To what extent does the Internet play a role in facilitating your involvement in professional or advocacy organizations related to your role as a gifted coordinator?
a) To what extent have these organizations aided and/or inhibited your ability to use the Internet to inform your decisions and recommendations as a gifted coordinator?

10) To what extent do you have the skills needed to do the things you'd like to do with technology related to coordinating gifted education services?
a) What, if any, additional technology skills do you think you need to develop?
b) What would be the best way for you to acquire these skills?

11) What other insights or observations would you like to share about the role of the Internet in your professional learning and decision-making?