E-Mentoring: Enhancing Special Education Teacher Induction

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- **Studies of e-mentoring in teacher induction provide information about technology-mediated supports, the nature of mentoring in an online environment, and mentee and mentor supports.**

- **Ten current e-mentoring programs show critical elements of e-mentoring that mimic and possibly enhance face-to-face mentoring practices for early career teachers.**

- **Recommendations address technical aspects and the implementation of e-mentoring that require ongoing training, facilitation, and efficacy examination.**

Teaching in 21st-century schools cannot easily be separated from technology-based solutions. Instead, technology is increasingly becoming an essential tool for any teacher's toolbox, especially the new teacher who is often considered a digital native (i.e., someone who has grown up with digital technologies) (Prensky, 2005). Whether it is online state assessments, Internet-based grade books, wireless buildings, or technology-rich classrooms, technology is a way of life for teachers and their students. For special education, where teachers strive to meet the needs of diverse learners in a universal manner, technology-based tools continue to offer much needed solutions (e.g., text-to-speech, touch windows, speech-to-text).

In teacher education and professional development, technology-based learning, or online/e-learning, is becoming an accepted mode of course delivery and teacher support. Offering just-in-time learning via the Internet is increasingly becoming a preferred approach for the busy teacher, especially the digital native who is often wired to Web-based resources (e.g., MySpace, Facebook). Most notably, e-mentoring is becoming popular as a means of supporting novice teachers. As new online induction and mentoring programs emerge and attempt to incorporate best practices of both face-to-face mentoring and e-pedagogy, it is worthwhile to examine the growing research on the efficacy of e-mentoring while also using the practical knowledge gained from current e-mentoring programs that support novice teachers.

This article briefly describes the growing e-mentoring literature base in teacher development and contextualizes that growth by highlighting particular e-mentoring programs. It is the intent of this review to share knowledge about this growing technology-based solution for furthering mentoring and induction supports for early career special educators.

Mentoring and Technology

For our purposes, *e-mentoring* is defined as the use of computer-mediated communications such as e-mail, discussion boards, chat rooms, blogs, Web conferencing, and growing Internet-based solutions that are changing the way mentors and mentees interact. Jaffe, Moir, Swanson, and Wheeler (2006) provide a comprehensive definition of *e-mentoring*, identifying it as a relationship between a more experienced individual (mentor) and a less skilled or experienced individual (mentee), primarily using computer-mediated communications, that is intended to develop and improve each mentee's skills, knowledge, confidence, and cultural understanding.

E-mentoring is designed to support novice teachers through differentiated experiences based on mentees' needs and immediate concerns (e.g., classroom management). It provides this support based on expertise. Instead of looking for the "best

fit'' within a building or district, e-mentors can be matched to mentees from a larger pool of experts. That is, a mentor in a different town, region, or state with the same teaching assignment might better support a mentee than a building mentor who teaches a different subject (Jaffe et al., 2006). The online environment also offers access to underlying learning theory that integrates key components of effective professional development. For example, e-mentoring is not time bound like traditional intensive programs. Instead, the duration is dependent upon the mentees' needs. Similarly, the instructional, cultural, and other unique needs of the mentee (e.g., paperwork) serve as a cornerstone to the process (Hebert, Clift, & Wennerdahl, 2008). Again, the mentor is selected based on these needs rather than ''place'' considerations.

Research on Efficacy

Although e-mentoring is an emerging practice in special education, literature in this area is still forthcoming; the current e-mentoring literature primarily reflects early initiatives in math and science (e.g., Jaffe et al., 2006). Findings indicate three general recommendations related to 1) technology-mediated communication, 2) the nature of the online mentor-mentee interactions and relationships, and 3) mentee and mentor supports. All three areas interrelate and affect one another. Online communication options, for example, affect the mentor-mentee interactions, whereas supports offered to mentors and mentees sustain both their technology-mediated communications and, consequently, their interactions and relationships. A brief review of the research follows to offer what the literature identifies as essential features of effective future e-mentoring programs.

What Research is Telling Us

Technology-Mediated Supports. Mentors and mentees primarily interact via text-based communication including e-mail and/or discussion board or forum entries. These text-based communications are commonly used because they do not require sophisticated technologies and can be learned easily. Often mimicking face-to-face communication, common text-based formats offer the same characteristics associated with face-to-face mentoring. Gareis and Nussbaum-Beach (2008) found

that the digital text–based format allows novice teachers to (a) interact with mentors by asking questions on pertinent issues, (b) seek others who are experiencing similar problems, and (c) simply vent.

The mentoring relationships with novice teachers do not appear impeded by the technology used (Dawson, Swain, Johnson, & Ring, 2004). Through e-mentoring, beginning teachers appear to engage mentors in typical mentoring processes, including asking questions specific to issues, seeking advice from seasoned professionals, and generally looking for solace (Jaffe et. al, 2006). As compared with face-to-face, the use of e-mail and discussion boards showed similar types of interactions; differences in communication only related to time of day, the manner in which the information was provided, and the ability to archive responses (e.g., answers) into a series of formats (e.g., frequently asked questions).

Of note, whereas recent e-mentoring studies (Gutke & Albion, 2008) appear to adopt technologies that provide varied interactive features, the mentoring continues to be digital-text based. For example, Gareis and Nussbaum-Beach (2008) use asynchronous discussion boards within a Web-based product called Tapped In. Although Tapped In (http://tappedin.org) advertises itself as the interactive online workplace for an international community of education professionals and features varied Internet-based tools, digital text appears to be the primary tool used among mentors and mentees (see Electronic Networking to Develop Accomplished Professional Teachers [ENDAPT] description for information about Tapped In).

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Nature of Mentoring. Another area of particular interest respective to e-mentoring is the impact of the mentoring relationship. For example, Bice (2005) found that novice teachers developed advanced awareness of students' learning characteristics and culture and used this knowledge to adapt their

practice to foster a climate of student respect. Furthermore, novice teachers, identified as having an awareness of their own and their students' cultures, advanced their understanding of multicultural teaching competencies when engaged with an e-mentor. Abbott (2003) found that novice teachers reported e-mentors helped by providing assistance ranging from practical teaching suggestions to general suggestions that helped them assimilate into the social and professional cultures of teaching. Novice teachers also felt their mentors provided valuable personal and emotional support, characterized by qualities that included caring, attentiveness, and positivity. The format for exchange was unique, but the type of information sought and the answers provided resembled traditional face-to-face support.

Mentee and Mentor Support. Herrington, Herrington, Kervin, and Ferry (2006) reported that mentors and mentees increased support, especially in online forums where groups of mentees and respective mentors posted thoughts accessible to the larger community of learners. Electronic access to peers experiencing similar issues, challenges, and classrooms helped mentees realize that they were not alone in their classroom concerns. Paulus and Scherff (2008) found that mentees often were reassured to learn that other peers were confronted with the same problems. That is, novice teachers were comforted knowing their difficulties were not unique and others struggled to identify solutions to their behavioral and instructional problems as well.

Klecka, Cheng, and Clift (2004) found that new and experienced teachers articulated that they participated in e-mentoring to engage in dialogue with both novice and experienced colleagues based on their shared experiences. Mentees struggling with classroom issues were able to present their situations and the effects on teaching practice. In turn, mentee (e.g., peers) and mentor teacher respondents provided input on how to frame a situation or work through a particular issue in their teaching. Mentees, especially, appreciated that they could participate by reading others' messages, thereby accessing ideas and strategies. Thus, the nature of the online environment, the anonymity of postings, and access to peers experiencing similar challenges and to mentors with relevant expertise were critical to the success of teacher induction support via e-mentoring.

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Mentors reported they could address the mentees' feelings of isolation through direct feedback, narratives that offered their own experiences, and ongoing support to ensure the mentees did not feel alone. Narratives offered exceptional support in that the story-based format opened the mentor and mentee to future topics for engagement while also answering the original question (Hawkes & Romiszowski, 2001). These narratives often illustrated the mentor's previous challenges, the nature of these problems, potential solutions, and most important, the process the mentor followed to address the needs of the classroom.

Lessons Learned. Though limited, research offers a foundation from which to build future e-mentoring programs. First, the online medium fosters varied communications (e.g., mentee-to-mentee, mentee-to-mentor, mentor-to-mentor) and offers an accessible ''place'' to interact. Mentees in a number of studies (Kasprisin, Single, Single, & Muller, 2003; Klecka et al., 2004) shared that online environments offer teachers opportunities to connect with similar-minded individuals not readily available in their building. They also found online environments less threatening and more conducive for sharing thoughts of inadequacy and doubts. With candid comments, mentors were better able to respond to concerns and contextualize their replies based on the mentees' honest, uninhibited postings. Similarly, flexible access (e.g., posts and responses when convenient to the mentor and mentee) to one's mentor with the ability to review previous comments, thoughts, and specific advice via digital text (e.g., discussion forum) is seen as a unique and critical feature within the e-mentoring process.

E-Mentoring in Practice

Understanding the research behind e-mentoring is critical; however, the relevant literature base is still developing. To supplement what we know, we turn to descriptions of current practices that are in various stages of implementation and data collection and

may or may not have been published in the research literature. These program descriptions offer example contexts and important insights into the application of e-mentoring in the field. The intent is not to cover the breadth of e-mentoring programs but to review a representative sample of existing programs. Programs were identified through literature reviews as well as through conference proceedings, presentation materials, and professional communication. Once programs were identified, we contacted project coordinators and asked them to participate in interviews regarding their projects. Findings from these conversations focused on (a) technical considerations and (b) mentor and mentee considerations. Ten e-mentoring programs were identified and illustrate a range of program structures (see *Table 1*). Only one program specifically focused on special education mentoring and induction (i.e., the Emporia State University program). Nonetheless, several programs did not distinguish by grade level or content area. These noncategorical programs integrated all novice teachers, including special educators, into their e-mentoring programs.

The 10 e-mentoring programs demonstrated a wide range of structures and formats. Programs differed in (a) the stakeholders who sponsored or supported the e-mentoring program (e.g., institutions of higher education [IHEs], departments of education, school districts, large cooperatives), (b) the software operating platforms and online interactions within these platforms (e.g., large group discussions, one-on-one private discussions), (c) mentor recruitment (e.g., online advertising, district recruitment, university recruitment), (d) mentor professional development (e.g., face-to-face versus online, set curriculum) and (e) funding agencies (e.g., U.S. Department of Education grants, foundation funds, state funds, district funds). Although programs used different methods to create and sustain e-mentoring programs, they all faced similar issues such as recruiting and preparing quality mentors, building and sustaining online infrastructures that encourage meaningful interactions, and sustaining programs when initial funding sources ended. Thus, the purpose of this analysis was to organize information about existing e-mentoring programs by their commonalities and differences in order to provide a framework for decision making related to the creation, utility, and sustainability of future special education e-mentoring programs.

A major challenge for e-mentoring programs is to incorporate what is known about effective mentoring and induction practices into online environments. Although there is a growing source of research literature related to effective mentoring practices (see Griffin this issue), little is written about what effective mentoring ''looks like'' within an online setting; thus, many e-mentoring programs are created, evaluated, and then redesigned based on trial and error.

Interviews were conducted with e-mentoring program coordinators and directors of all 10 programs included in *Table 1*. Outcomes suggest two key programmatic considerations related to technology use and mentor-mentee relationships.

Technology Considerations

Technology considerations in e-mentoring programs covered four main areas: (a) software operating platform to be used, (b) communication through asynchronous versus synchronous media, (c) inclusion of online resources and curricula within the Web site, and (d) the role of facilitators within the programs.

Software Operating Platform. The first decision that developers of programs make relates to the type of online operating platform they use. In this context, the software operating platform is simply defined as the ''place'' in which the e-mentoring program is located. The two most common operating platforms were either course management systems (CMS) or communities-of-practice Web sites. Of the 10 e-mentoring programs described, seven used CMS such as BlackBoard or Moodle as their operating platforms. The clear preference for CMS is not surprising because the e-mentoring programs are primarily housed in IHEs where CMS are one of the most used educational technologies in higher education (West, Waddoups, & Graham, 2007). Five programs relied on commercial CMS. Of these programs, Illinois New Teachers Collaborative [INTC]-Online, Project Teacher Induction (TIN), and voice over Internet protocol (VoIP) used Moodle (http://moodle.org), e-Mentoring for Student Success (eMSS) used Sakai (http://sakaiproject.org), and Welcoming Interns & Novices with Guidance & Support (WINGS) used FarCry (http://www.farcrycms.org).

Program coordinators and directors who represented these programs stated that the decision to use these commercial CMS was based on the range of

Table 1: E-mentoring programs

Project name, Web site	Software operating platform(s) and software	Components
Illinois New Teacher Collaborative-Online (INTC-Online), http://intc.education.illinois.edu/	Moodle Adobe Connect (beginning Fall 2008)	• Large group discussion forums • Synchronous chat (Moodle) • Video conferencing (Adobe Connect) • Content specific online resources
eMSS (e-mentoring for student success) Science and math e-mentoring sites, http://newteachercenter.org/eMSS	Sakai CMS	• Private mentor/mentee discussions (one mentor working with 3–4 mentees) • 6- to 8-week curricula around content • Large group discussions • Links to curricular Web resources
WINGS (Welcoming Interns & Novices with Guidance & Support), https://uteach.utexas.edu/wings	Platform: FarCry Course Management System	• Private mentor-mentee discussion forums • Mentor development resources • Online content and pedagogical resources
Project TIN (Teacher Induction Program) moodle.umn.edu/ to sign up go to www.umn.edu/dirtools/ guestportal	Moodle CMS Adobe Connect for video conferencing and file sharing	• Large-group case-based discussion forums • Small group discussions • Mentor-mentee private discussions • Video conferencing
ENDAPT: Electronic Networking to Develop Accomplished Professional Teachers, http://endapt.wm.edu	Tapped In (Online community of practice platform) http://tappedin.org	• Large group discussion groups around curricular issues • Private one-on-one e-mentoring components include private e-mail, discussions, and chat
Performance-based Academic Coaching Team (PACT), http://tap.tarleton.edu/pact/	Platform: self-developed	• Large group discussions • Small group chat sessions around critical issues • "Help Request"—ask for private e-mail or phone mentoring • Online resources and mentor development resources/modules
UWeb Teacher Support Network using Teachers Learning in Networked Communities (TLINC), http://depts.washington.edu/wactl/tlinc/	Platform: internally developed	• Large group discussions • Resources developed in school of education courses • **Restructuring year: E-mentoring program is shifting focus to transitioning preservice teachers to in-service.
Building Resources: Induction and Development for Georgia Educators (BRIDGE), http://www.teachersbridge.org/	Platform: internally developed	• Professional resources around the Georgia Framework for Teaching standards • Discussion forums -Chat room • Future plans to explore the use of VoIP and video conferencing.

Table 1: Continued

Project name, Web site	Software operating platform(s) and software	Components
Emporia State University Virtual Mentoring Program (internal Web site accessible only to mentees and mentors)	Blackboard (Bb) CMS Horizon Wimba (VoIP)	• Large group discussion (Bb)
		• Weekly VoIP meetings/guest lectures (Wimba)
		• Links to curricular web resources
		• Collaboration with school district mentor resources for content, discussions, etc.
		**Restructuring year: E-mentoring program is shifting focus to more district-based e-mentoring.
TLINC-Denver, Website: Private space within Tapped In (www.tappedin.org)	Tapped In (online community-of-practice software) (www.tappedin.org)	• Components depend on interactions and included:
		• Private and open large group discussions
		• Private and open synchronous chat
		• Online resources (Tapped In library and private resources)

Note. VoIP = voice over Internet protocol.

communication options they provided, such as asynchronous threaded discussions and synchronous chats, as well as other functions, such as file sharing and the ability to link to outside Web sites. For example, the project coordinator for Project TIN stated that the program chose Moodle as its software operating system for several reasons: (1) technical support for Moodle existed at the university, (2) the aesthetic layout was better than other CMS supported by the university, and (3) Moodle is an open source (i.e., it is free and could be maintained after initial grant funding ended).

Two programs relied on internally developed CMS. Project Performance-based Academic Coaching Team (PACT), for example, developed its own system to maximize customization and versatility. It included three facilitated resources (discussion forums, chat rooms, and a private message board called ''Help Request''). In addition to these facilitated resources, Project PACT organized self-paced resources for both novice teachers and their mentors. Although the commercial platforms do allow these tasks, by developing their own platform, the PACT project developers customized these sections to fit their needs.

Two programs (ENDAPT and the CU-Denver Teachers Learning in Networked Communities [TLINC]) used a community-of-practice platform. A

community of practice is defined as ''emergent, self-reproducing, and evolving entities that are distinct from, and frequently extend beyond, formal organizational structures, with their own organizing structures, norms of behavior, communication channels, and histories'' (Farooq, Shank, Fusco, & Schlager, 2007, p. 4). It is interesting that both programs used the same platform, Tapped In (http://tappedin.org/tappedin/), which provides an online structure similar to a virtual school with different rooms designated for various e-mentoring activities. By simulating a virtual school, the e-mentoring programs hoped to initiate meaningful mentoring opportunities within a familiar environment. For example, the CU-Denver used Tapped In for several reasons. First, because it is open-source software, the e-mentoring platform will remain available once development funding ends. Second, because Tapped In is specifically designed to be open to all educators, it includes many resources and opportunities for CU-Denver TLINC participants outside of the specific supports offered through their program (e.g., virtual library).

Asynchronous Versus Synchronous Communications. In an online environment, communication obviously differs from face-to-face interactions. Similar to research findings,

communication among programs reviewed was generally text based. These text-based communications occurred either through asynchronous discussion forums or through synchronous chats. Asynchronous discussion forums served either as large group discussions of general topics or as private forums for mentors and mentees to interact confidentially. The synchronous chat sessions generally served the same functions. As expected, all e-mentoring programs included asynchronous discussion forums, and five used synchronous chats. Only 3 of the 10 programs used non–text-based communications, 2 of which were in the exploratory stage of video or audio technology adoption.

The most common form of communication occurred through asynchronous discussion board forums. In fact, all 10 programs included this form of communication with the mentees. A distinguishing feature among these programs was whether their discussion forums were large, public discussions related to general topics or small, private discussions between the mentors and mentees for private discussions. Four of the programs (eMSS, ENDAPT, Project TIN, and WINGS) included private discussions in which mentors and mentees engaged in discussions in a secure part of the Web site that others (except for the Web site facilitators) could not enter. Project coordinators of these e-mentoring programs believed that allowing for confidential communications between mentors and their mentees encouraged mentees to be more open and forthright about their questions and concerns. In addition to closed forums, eMSS, ENDAPT, and Project TIN included large group discussions in which the mentors and mentees discussed general concerns and questions.

Besides the distinction between public discussions and small, private discussions, the other distinguishing feature was whether discussions were planned around predetermined topics or whether they provided ''on-demand'' help with topics initiated by the mentees. Most programs offered both types of discussions. The secure discussion boards used by small groups all offered on-demand help to the mentees. Due to the nature of the small, private discussion forums, these spaces often were used to discuss the immediate questions and concerns that the mentees had as they progressed through their first years of teaching. Within the programs that offered the large-group discussion forums, five of the programs provided this type of on-demand structure as well (INTC-Online, eMSS, TIN, PACT, and Building Resources: Induction and Development for Georgia Educators [BRIDGE]). These programs, however, also provided predetermined discussions around critical areas of instruction and pedagogy.

The synchronous text-based element within the e-mentoring programs typically involved a chat option where mentees and mentors could communicate by typing back and forth in real time. Five of the programs included this form of communication (INTC-Online, eMSS, PACT, BRIDGE and CU-Denver TLINC). The synchronous group chats, or virtual meetings, used to discuss critical issues within these programs, typically were scheduled in advance. For example, a major component of the PACT program was Discussion Central, in which chat sessions around specific pedagogical or content issues would be covered. These chats are restricted to 15 to 20 participants, so the mentees must reserve a spot to participate. These chat sessions were differentiated by grade level and content area in order to meet the specific demands of the participants.

Three programs used video and/or audio communications as part of their e-mentoring programs. Two of these programs (INTC-Online and Project TIN) are exploring the use of Adobe Connect, a type of videoconferencing software. Developers are considering its use for mentor training and support, as well as for mentor and mentee communication. One program, Emporia State University's Virtual Mentoring Program, uses Horizon Wimba, an audio conferencing software. This software is used to conduct large group discussions and guest lectures. Through Horizon Wimba, the facilitator can have audio conversations with the mentees.

Mentor-Mentee Considerations

Interactions within the e-mentoring programs varied considerably based on the types of mentor-mentee relationships within the programs. The highlighted programs ranged from one-on-one mentor-mentee relationships to large group supports offered to numerous mentees by one or two facilitators/ mentors. Within this range, the critical difference was whether the mentors and mentees were purposefully matched into ongoing and established dyads or small

groups, or whether the e-mentoring occurred with several changing mentors, depending on content, context, specific concerns, and/or scheduling issues. A related, and equally critical, aspect of the mentor-mentee relationships was the type of preparation mentors received to work with mentees within an online setting. Just as mentor-mentee relationships varied among the programs, the types of preparation and the training the mentors received also varied among programs. Differences in preparation included (a) ongoing versus single-time professional development, (b) face-to-face versus online training, and (c) the use of prescribed mentor training curricula.

One distinction between the e-mentoring programs involved the decision to include either dyadic or small group mentoring relationships, or large group interactions among many mentors and mentees. Six programs matched mentors and mentees (BRIDGE, eMSS, ENDAPT, PACT, TIN, and WINGS). Typical matching criteria included grade level, content area, and geographic location (urban, rural, or suburban). In addition to these criteria, a couple of programs used mentee questionnaires that asked more in-depth questions as well as provided the mentees an opportunity to indicate the types of mentors they preferred. The eMSS program, for example, matched mentors with mentees based on content, grade level, geographic region, and teaching context (rural, urban, and suburban). Two programs, ENDAPT and WINGS, allowed the mentees to choose their own mentors from a database of mentor profiles on the e-mentoring Web sites that included information such as the mentor's teaching experience, content areas, geographic location, and other distinguishing characteristics. Once mentees chose the profile of an available mentor, they requested the mentor through the ENDAPT or WINGS Web sites. Then, the Web site facilitator contacted the mentor to begin the mentorship relationship.

Large Group Mentor-Mentee Supports. Several strategies for mentoring novice teachers were used in large group mentoring. PACT, for example, uses the mentors' time by assigning them to 4-hour time shifts in which they are responsible for answering discussion board and chat room questions. Typically, four to five mentors are available between 8 AM and 12 AM; the extended time was deemed necessary because the coordinators found that the mentees' work-related reflective time often occurs late in the

evening and into the night due to family and other commitments. Consequently, a great deal of Web site activity occurs after the traditional workday. INTC-Online uses a different form of large group mentor-mentee support. They have a pool of mentors with diverse areas of expertise. The facilitators assign mentors to respond to the mentee depending on the mentee's immediate request or the specific topic being discussed.

Mentor Preparation. All programs that used dyadic or small group mentoring and most programs that used large group mentoring spent a great deal of time both on recruiting effective mentors and preparing them for their roles as mentors within an online environment. Program coordinators from these programs stated that the tasks of recruitment and preparation of e-mentors were crucial for the success of the e-mentoring programs.

Mentor Recruitment. With the exception of two programs that used university-based mentors (UWeb and VoIP), the first step to mentor preparation consisted of recruiting quality e-mentors. As was apparent in their recruitment strategies, these programs put a lot of emphasis on finding qualified and effective mentors to work with the novice teachers. Three of the programs recruited mentors with specific qualifications related to membership in a particular organization: INTC-Online recruited national board certified teachers; ENDAPT recruited teachers belonging to the Virginia Teacher Leadership Network as well as national-board–certified teachers; and BRIDGE recruited certified Critical Friends Facilitators. This specific recruitment strategy was used to enlist effective teachers with proven leadership ability.

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The other programs used a range of other recruitment strategies to obtain highly qualified mentors. One means of mentor recruitment was through collaboration with school districts. For

example, WINGS worked closely with the school districts in recruiting e-mentors. Once e-mentors were nominated, the WINGS staff screened their applications to determine whether the candidates were suitable mentors. These programs placed high value on recruiting skilled mentors in order to ensure that with proper professional development related to working in an online environment, mentors would be able to provide effective supports to the novice teachers.

Mentor Professional Development. Varying formats for preparing mentors to provide support within an online environment were reported. Two main differences existed between the types of professional development offered to the mentors: face-to-face versus online professional development and initial versus ongoing professional development. Five programs included some form of face-to-face professional development (INTC-Online, TIN, ENDAPT, PACT, and BRIDGE). These programs used face-to-face professional development as a means of introducing topics such as navigating the online platforms, strategies for interacting with mentees in an online environment, and e-etiquette. Although these programs provided initial face-to-face preparation, they also provided ongoing support online. One program, eMSS, provided all its mentors with professional development online because their experience suggested that mentors prepared online could better translate that preparation in an online context. The WINGS and ENDAPT programs provided online resources and modules for mentors with information related to general mentoring strategies as well as mentoring within an online environment. As trends in mentor concerns and issues arise, additional modules are developed to address those needs. Last, the CU-Denver TLINC program provided a private group room within the e-mentoring program that served as a place for professional development as well as a place for idea sharing, problem solving, and resource sharing. By creating an online learning community for the mentors, the program coordinators found that the veteran teachers serving as mentors would become more skillful and competent with providing online supports to their mentees.

Facilitator Roles. One of the major issues that emerged from the interviews was the need for effective Web site facilitation to support mentor-mentee communications. Facilitators had many roles in the e-mentoring programs that involved both technical supports and program supports. Several program coordinators stated that facilitators required professional development to address the unique skill set of providing support to mentors and mentees in an online format.

Technical Facilitator Support. The technical supports provided by facilitators involved assistance in maintenance, training, and support of the various Web site components. With the exception of the programs using Tapped In, the e-mentoring programs had local technical facilitators. These facilitators either were tied directly to the e-mentoring programs or offered technical support to the university-wide CMS. Programs that used Tapped In, however, had remote technical facilitators associated with the greater Tapped In community. For example, CU-Denver TLINC used the Tapped In facilitators during program development, at the onset of the project, and for ongoing support as technical issues or questions arose.

Program Facilitator Supports. Although the technical supports offered by facilitators were crucial, the major tasks of the facilitators involved program facilitation such as monitoring interactions on the e-mentoring Web site, answering questions brought forward by mentors and mentees, and encouraging participation. These tasks often involved relationship building with the mentors and mentees, providing mentor professional development, and assigning specific roles and interactions within discussion boards. All interviewees stated that the role of the facilitator(s) was critical to the success of the e-mentoring program because simply providing a forum for communication between mentors and mentees was not enough for meaningful interactions.

Summary and Recommendations for Practice and Research

For leaders and other professionals interested in developing e-mentoring programs, several areas should be addressed. First, technology-based support and professional development is a critical component identified by current e-mentoring programs and in the available literature. If teachers, both novice and veteran, are not aware of the functionality of the technology-based tools and are uncomfortable in its application, the technology (though accessible) will not be used to its potential. Second, research and current practice indicate that mentoring online is

different from mentoring in a face-to-face environment. Therefore, mentors need to be trained on how to support mentees at a distance, understand the nuances of communication in synchronous and asynchronous environments, and understand current best practice related to e-learning.

The unique technical and implementation aspects of e-mentoring also require ongoing support facilitation. Online facilitation must be easily accessible to ensure successful mentor and mentee interaction. Similarly, personnel and technical investments are an ongoing necessity if e-mentoring programs are to be sustainable. Finally, continued research needs to be conducted to determine the efficacy of e-mentoring as a supplement to face-to-face mentoring as well as a possible replacement. Further research in understanding the impact of technology-based tools on e-mentoring is also needed. If we can determine how best to support early-career teachers through face-to-face and technology-based solutions, we enhance the tools available to ensure their success.

Unique Challenges for E-Mentoring in Special Education

Although current e-mentoring literature and special education exemplars are limited, evidence indicates potential for these programs in providing much-needed support to novice special educators. The promise of e-mentoring offers another tool, if not a solution, in providing the ongoing support of early-career special educators as they strive to be successful in their classrooms. Although the programs described above provide a blueprint for e-mentoring within a special education context, several special education–specific considerations must be addressed. First, the content of special education e-mentoring programs should focus on specific needs of special educators. Whereas the math and science literature focuses on content support, supports for early-career special educators would need to address issues such as limited knowledge of the paperwork, process, collaboration with professionals and families, and similar challenges unique to special education (see Billingsley, this issue). Second, many early-career special educators have limited access to other special educators in their school buildings, potentially increasing the demands placed on e-mentors who must support beginning teachers with little local

assistance. Professional development and support for these mentors, therefore, may address ways of supporting the mentees with the different districts' individualized education program processes, Student Intervention Team processes, and related aspects of the paperwork portion of the position.

E-mentoring has potential for addressing a number of needs of beginning special educators and provides special education leaders with a viable tool for designing successful induction.

In summary, the literature reviewed and programs highlighted in this paper suggest that e-mentoring holds promise as an induction practice for early-career special educators. E-mentoring is not bound by geographic region or dependent on the availability of mentors in the novice's school building. It is capable of providing quality mentoring support that extends beyond the school day and can connect early-career special educators with many other beginning teachers. Connections between beginning teachers and their mentors via e-mentoring have potential for addressing the isolation new teachers experience and have been found to help novice teachers realize that their experiences and challenges are similar to their peers in other school settings. E-mentoring has potential for addressing a number of needs of beginning special educators and provides special education leaders with a viable tool for designing successful induction. Finally, this technology-based solution offers a flexible tool whereby mentors and mentees can be connected when needed, regardless of geographical and time constraints, in a format that mimics, if not expands, traditional face-to-face interaction and in a way that increases solutions while simultaneously reducing costs of implementation and access.

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