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Teachers Mentoring Teachers: A View Over Time

Nate McCaughtry

Wayne State University, aj4391@wayne.edu

Donetta Cothran

Indiana University

Pamela Hodges Kulinna

Arizona State University

Jeffrey J. Martin

Wayne State University, aa3975@wayne.edu

Roberta Faust

Eastern Michigan University

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Chapter 3: Teachers Mentoring Teachers: A View Over Time

Nate McCaughtry
Wayne State University

Donetta Cothran
Indiana University

Pamela Hodges Kulinna
Arizona State University

Jeffrey Martin
Wayne State University

Roberta Faust
Eastern Michigan University

Teaching is a complex and challenging profession and the demands can be overwhelming particularly for novice educators. Beginning teachers face many immediate challenges such as developing year-long curricula, organizing classrooms, implementing effective classroom management, learning the organizational structure of the school, meshing with colleagues, and working with diverse students and parents (Kent, 2000). In addition, new teachers often obtain employment in districts with explicit and comprehensive district curricula already in place. This means that in addition to becoming acculturated to their classroom and school, many new teachers must go through the process of understanding the district's curriculum and merging it with the curricula they learned at the university and used when student teaching. This two-pronged dilemma of learning and developing in a new teaching context combined with learning the district's formal curriculum proves quite challenging and even frustrating for many new teachers. So much so, that up to 30% of new teachers leave the field within the first 5 years of teaching (Montgomery-Halford, 1998; National Commission on Teaching and America's Future, 1997).

New teachers are not, however, the only teachers who face challenges. Teaching is always a complex act and is never static. In addition to changes in the student population, Borko and Putnam (1996) describe formal change initiatives that experienced teachers face; they "are often presented with mandates for changing the way they teach, through national standards, new textbooks, or school, district,

McCaughtry is with Wayne State University, Division of Kinesiology, Health, and Sport Studies, 125 Matthaei Bldg., Detroit, MI; Kulinna is with Arizona State University at the Polytechnic Campus, Department of Education, 7001 E. Williams Field Rd. Bldg. 140, Mesa, AZ; Cothran is with Indiana University, Department of Kinesiology, HPER 112, Bloomington, IN; Martin is with Wayne State University, Division of KHS, 265 Matthaei Bldg., Detroit MI; Faust is with Eastern Michigan University, School of Health Promotion and Human Performance, Ypsilanti, MI.

or state policies” (p. 702). According to Wells (1993), when teachers change the grade level or subjects they teach or implement a new curriculum for whatever reason, they, in essence, become novice teachers again in many ways. Essentially, moving within a district or instituting new educational policies in a state, school district, or school can create a context in which seemingly experienced teachers could face key challenges similar to those faced by many newer teachers. It was the purpose of this investigation to explore one school district’s professional development program intended to address the challenges that newer teachers face when learning new curricula.

Mentoring in Physical Education

One popular strategy for easing the transition demands of new (and sometimes experienced) teachers is the use of formal induction programs (Gold, 1996; Little, 1990; Serpell & Bozeman, 1999; Smith & Ingersoll, 2004). More than 25 states currently have developed some type of new teacher support, and formal mentoring programs are frequently a key aspect of these programs (Fideler & Haselkorn, 1999; Smith & Ingersoll, 2004). In addition, many individual school districts and schools implement some type of mentoring activities irrespective of their state education mandate.

It is often suggested that, of the many possible benefits of a mentoring process, mentors can help new teachers in two key areas (Little, 1990; Montgomery-Halford, 1998). First, they can contribute guidance and serve as a sounding board for the career transition into education, especially with the nonteaching issues that new teachers face, including dealing with administrators and parents (Gehrke & Kay, 1984; Kay, 1990; Stedman & Stroot, 1998). Second, mentors can help novice teachers learn and implement curricula for the first time (Bey & Holmes, 1990). In addition, it stands to reason that if mentors are a positive influence on beginning teachers, then they might also be a positive influence on more experienced teachers in need of renewed vigor or because they are attempting new instructional practices and curricula (McCaughy & Rovegno, 2003; Rovegno, 1998) after a move to a different grade level, subject area, or changes in school or district curriculum.

To achieve these intended outcomes, mentoring programs tend to provide one-on-one assistance between a newer teacher and a mentor specialist (Bey & Holmes, 1990; Smith & Ingersoll, 2004). Mentor specialists can be university personnel who continue to guide preservice teachers after they enter the teaching profession, school district curriculum specialists, or other experienced teachers in the new teacher’s subject area (Smith & Ingersoll).

The key to mentoring programs, whether working with new or experienced teachers, is the effectiveness of the mentor. In summarizing the research on effective mentoring, Stroot et al. (1998) noted that effective mentors possess rich and sophisticated content, curricular, and pedagogical knowledge and also have strong listening and communication skills that can support, motivate, and emotionally engage a protégé. Unfortunately, most mentors have not received formal training in the skills needed to guide newer teachers’ growth and development (Ganser, 1999; Podsen & Denmark, 2000), and therefore the mentor–protégé relationship might be unlikely to achieve its full promise. Nevertheless, the limited research on

the outcomes of mentoring programs suggests that teachers who receive mentoring are more likely to stay in teaching, be satisfied, hold better teaching attitudes, and implement more effective instructional practices and long term planning. In addition, the administrators of mentored teachers note fewer problems (Serpell & Bozeman, 1999; Smith & Ingersoll, 2004).

Unfortunately much less is known about the outcomes of mentoring in the area of physical education than in classroom subjects. We know that beginning physical educators struggle during induction (Smyth, 1995; Solmon, Worthy, & Carter, 1993; Williams & Williamson, 1998) and could benefit from mentoring (Wright & Smith, 2000). What is known about mentors, however, has been framed largely in socialization theory and has focused on the needs and views of beginning teachers from qualitative perspectives (e.g., Napper-Owen & Phillips, 1995). Similar to the general education research, these researchers have found that effective mentoring seems to have a positive influence on new teachers' transitions into teaching.

Types of Professional Development to Facilitate Mentoring

The prospects of mentoring are typically initiated and facilitated through some process of professional development among mentors with more experienced and protégés with less experience, although some informal mentoring occasionally occurs outside the context of planned programs. Broadly conceptualized, a number of theorists on teacher professional development suggest that two distinct patterns of activities and associated philosophies can be identified in education literature (Armour & Yelling, 2004; Garet, Porter, Desimone, Birmans, & SukYoon, 2001; Hargreaves & Dawe, 1990). First, traditional professional development is typically guided by a variety of characteristics, which inevitably position the process and the external personnel as privileged (Hargreaves & Dawe). Some of the characteristics of traditional professional development include: short (usually one-shot) workshops with little follow-up; predetermined and highly structured sequences and activities; didactic instruction with passive learning; impersonalism; random pairing of teachers; decontextualization from the realities of schools in which innovations and change must take place; and a lack of reflection in and on teaching (Armour & Yelling; Garet et al.; Hargreaves & Dawe; Schon, 1983). Critics of the traditional approach to professional development claim that little actual teacher learning, hence real change, occurs when time is short and teachers are not treated as the centerpiece of the process. Referencing a pivotal work by Sparks (2002), Armour and Yelling say of traditional forms of professional development,

Sparks argues that there needs to be greater awareness that traditional forms of CPD [Continuing Professional Development] may be ineffective and may be described as the "batch processing" of teachers who are "talked at" in the name of "exposing" them to new ideas. He . . . points out that these traditional approaches are unlikely to be effective in raising the standards of teachers' or pupils' learning. . . . Instead, such professional development is more likely to result in "fragmented and incoherent teacher learning that lacks intellectual rigor, fails to build on existing knowledge and skills, and does little to

support teachers in the day-to-day challenges of improving student learning.” (p. 72–73)

Traditional professional development guided by one-shot workshops should not be considered entirely uniform or without merit. In some cases, it might present the most practical and viable methodologies for making progress toward the intended outcomes. Taken as a general form of professional development for teachers, however, especially physical education teachers, it seems to be the most popular yet least teacher centered. It also stands to reason that traditional one-shot workshops might more easily lead to direct forms of instruction from which teachers are recipients of knowledge and skill, given that expedient learning in a single session is the primary focus over longer and more extended forms of professional development that offer more opportunities for collaboration and teachers’ active learning.

Second, Garet et al. (2001) contrast traditional professional development with reform-style professional development, which positions teachers at the heart of the development process. Reform-based professional development has much in common with Hargreaves and Dawe’s (1990) vision of collaborative professional development and Armour and Yelling’s (2004) perspective on professional “learning.” Characteristics of reform-based professional development include: sustained learning opportunities (measured in months and years); semi-structured designs; relationship building (among teachers and specialists if used); contextualization of learning (learning often occurs at schools); relevance to practitioners; practical and ready-to-incorporate ideas; reflection and centering on active, adult learning (Knowles, Holton, & Swanson, 1998); and mentor relationships among teachers with similar schools, grades, subjects, situations, and personalities. Hargreaves and Dawe draw a similar striking contrast between traditional and reform/collaboration-based professional development.

Collaborative professional development, we can see, is therefore locked within two very different, contradictory forms of discourse. In the one, it is a tool of teacher empowerment and professional enhancement, bringing colleagues and their expertise together to generate critical yet also practically grounded reflection on what they do as a basis for wiser, more skilled action. In the other [traditional professional development], the breakdown of teacher isolation is a mechanism designed to facilitate the smooth and uncritical adoption of preferred forms of action (new teaching styles) introduced and imposed by experts from elsewhere, in which teachers become technicians rather than professionals exercising discretionary judgment. (p. 230)

Although it is unclear whether traditional or reform-style professional development improves student learning any better than the other, it is clear that both forms of professional development differ in intensity, duration, and the positioning of the teacher with respect to the process.

The project in which this study was nested implemented a mentorship program emblematic of reform-based professional development. In this particular study, we wanted to learn more about the potential outcomes that a reform-based mentorship program can have for both mentors and their protégés. We had two chief research questions. First, we wanted to know how a reform-based professional development

program could influence experienced teachers' self-rated competence in mentoring newer teachers. Second, we wanted to know how experienced mentors could influence newer teachers' thinking about teaching and the mentoring experience.

Method

Overview of the Project

Groundwork for the current project started several years before this study when teachers and physical education administrators in a large, Midwestern school district began the process of adopting the Exemplary Physical Education Curriculum (EPEC) into the formal district curricula and providing teachers with professional development opportunities to learn it and implement it. EPEC is a health-related physical activity curriculum developed by the Michigan Fitness Foundation with assistance from educators throughout the state (Michigan's EPEC, 2000). The latest research on health and wellness was used in the development of the curriculum, which focuses on preparing students to be physically active for a lifetime. The curriculum is comprised of four content areas: physical fitness, activity-related knowledge, motor skills, and personal/social skills. The Centers for Disease Control awarded the EPEC curriculum the *Achievement in Prevention Research and Research Translation in Chronic Disease Award* in 2001. More information on EPEC can be found at www.michiganfitness.org/EPEC.

During the previous year (2002–2003), leading up to the current project (2003–2004), 30 district elementary physical education teachers participated in an advanced and comprehensive EPEC project that included numerous day-long workshops and at-school assistance across the entire school year (McCaughtry, 2004).

Administrators in the school district had two objectives for the current project aimed at further promoting the adoption and implementation of the EPEC curriculum throughout the district. First, they wanted to design a project specifically tailored to the newest elementary physical education teachers in the district to facilitate their induction and ensure they knew and could teach EPEC. Second, they wanted a cohort group of EPEC-experienced teachers to be trained as new teacher mentors so that all future teachers to the district could receive induction and EPEC mentoring from another district teacher. The district's physical education administrator was concerned about the high turnover rate in the district and that many of the new teachers had little, if any, experience with the EPEC curriculum. Therefore, having a mechanism to assist new teachers as they transition into the district was paramount to further implementing the district physical education curricula.

Two groups of teachers volunteered and were invited to participate in the project. First, we invited 15 experienced EPEC teachers to participate and learn to be mentors for newer physical education teachers. Over the previous several years, each of these mentor teachers had attended at least five day-long EPEC workshops, received comprehensive at-school support and guidance, and demonstrated high levels of EPEC implementation identified through teacher observations and self-reports. These teachers also expressed a desire to further the initiative of integrating EPEC into more district schools and assist their newer counterparts in the induction process and curricular learning. Second, 15 newer elementary physical education teachers volunteered to learn and be mentored in the EPEC curriculum for 1 school

year. These teachers were all unfamiliar with EPEC; many were within their first 3 years of teaching, and others had recently moved from secondary physical education or classroom teaching assignments to the elementary physical education setting. In general, the protégés were fairly new to teaching elementary physical education and totally new to the EPEC curriculum. The 30 teacher participants were men ($n = 12$) and women ($n = 18$). Mentors were comprised of 12 women and 3 men, whereas protégés included 6 women and 9 men. The majority of teachers reported their ethnic background as African American ($n = 14$) or Caucasian ($n = 15$) with one teacher reporting “other.” The mentor group reported 7 each African-American and Caucasian ethnic backgrounds, along with the one teacher reporting “other,” whereas the protégé group reported 8 Caucasian and 7 African-American. Overall, participants’ experience teaching physical education ranged from several months to 37 years ($M = 13.56$, $SD = 11.89$), with mentor teachers having vastly more teaching experience ($M = 22.46$, $SD = 10.25$) than protégés ($M = 5.36$, $SD = 5.71$).

Across the 2003–2004 school year, the 15 mentor and 15 protégé teachers participated in numerous forms of professional development. These included workshops, videotaped lesson exchanges, school exchanges, and chat room correspondence. Some of these activities have also been described in McCaughtry, Martin, Anderson-Smigell, and Barnard (2004).

Pre-Workshop: EPEC training for protégé teachers. The project began in October with a comprehensive, day-long workshop for the protégé teachers conducted by the Michigan Fitness Foundation—the group that spearheaded EPEC’s development and had trained teachers throughout the state. The teachers learned the curriculum through presentations, lesson demonstrations, and discussion forums. They also received all curriculum materials (books and posters) and all the physical education equipment (e.g., bats, balls, cones, etc.) needed to teach the entire EPEC curriculum to classes of 30 students. This workshop took place before the mentoring portion of the project began.

Workshop 1: Mentor training for mentor teachers. In early November all 15 mentor teachers attended a day-long workshop given by the research team aimed at helping them learn how to become mentors for new teachers. These team members had extensive teacher training backgrounds, as well as knowledge of teacher development, professional development, and mentoring literatures. Sessions were generally dialogical and some of the topics included struggles of new teachers, struggles of learning new curriculum, and effective communication. Teachers were given extensive supporting materials at all of the workshops. At this workshop they received mentoring and consulting models (i.e., pre-observation conference, observation, and post-observation conference), and reflective teaching handouts.

Workshop 2: Mentor and protégé merging workshop. At an early December workshop, each mentor teacher was paired with one protégé teacher. Pairing was done before the workshop by the research team and the school district’s physical education coordinator using the following considerations: (a) similar types of schools and facilities (e.g., K–8, Spanish speaking schools), (b) strengths and backgrounds of mentors matched to strengths and needs of protégés (e.g., computer expertise, years of experience), (c) personalities (because they would be working

together for a year), and (d) school locations (a consideration for only one protégé teacher who did not drive).

At this workshop, teachers got to know one another, talked about EPEC, socialized, and learned how to access chat rooms and communicate via on-line media. Each mentor/protégé pair had their own private chat room for communication (with monitoring by project staff). In addition, mentors had a mentor-only chat room and protégés had a protégé-only chat room to communicate with colleagues.

Throughout the program, participants identified topics of interest and needs, and subsequent workshops focused on them. At Workshop 1, mentor teachers voiced a strong need and desire for computer training. All subsequent workshops included a hands-on computer component to provide teachers with adequate skill development so they could chat with each other online, as well as to address participant-identified computer skill needs. We offered beginner and more advanced computer sessions with topics ranging from using the chat rooms to conducting advanced topical searches using search engines. Each computer session built on the foundation of the previous session, and teachers determined whether to attend the beginner or more advanced computer sessions.

Period between Workshops 2 and 3 (December and January). Between Workshops 2 and 3, the mentor–protégé pairs communicated with one another via the chat rooms. This was the primary mode of communication between mentors and protégés, along with discussions at workshops and visits to each other’s schools. Most initial communications centered on the individuals getting to know each other, discussions of each teacher’s school context, and some discussions about EPEC. After several weeks, teachers were given one prompt per week on the chat room from the research team (e.g., “discuss one EPEC lesson that you both taught this week”). The rest of the electronic conversations were teacher driven. Mentor and protégé pairs chatted between 37 and 93 times over the year ($M = 56.60$, $SD = 17.65$).

Workshop 3: EPEC and pedometers. In late January the teachers attended a follow-up EPEC workshop in which they continued talking about EPEC and its implementation. Teachers were also given 30 pedometers and training to assist them in teaching the fitness components of EPEC. Pedometer training included a lecture and discussion on pedometers and physical activity, as well as hands-on practice using pedometers, and covered topics such as calculating baseline steps, setting goals, and estimating distances in steps. Teachers were also taught logistical procedures such as how to correctly put pedometers on, how to calibrate them, and how to efficiently distribute and collect them in classes. Computer sessions consisted of further chat-room training, as well as basic computer skills (e.g., opening and closing windows), accessing websites (e.g., PE Central), and basic Internet searches.

Period between Workshops 3 and 4 (late January to March). Between Workshops 3 and 4, the mentoring pairs continued communicating in their chat rooms about EPEC, EPEC teaching, and general teaching and school challenges. In addition, each protégé videotaped two of their EPEC lessons and sent them to his or her mentor. The mentors then evaluated the lessons and initiated a conversation with their protégés about the lessons in the chat rooms.

Workshop 4: EPEC follow-up. The final project workshop took place in March and centered on EPEC follow-up. In an open forum, the teachers discussed challenges they faced, successes they were having, and connections to their previous curricula. In addition, the teachers peer-taught EPEC lessons to one another. Finally, the computer sessions addressed chat-room issues, sending and receiving attachments, advanced Internet searches, and creating and using spreadsheets for grading.

Period after Workshop 4 (March to June). Between Workshop 4 and the end of the school year, the teachers continued communicating with each other using the chat rooms. They also did school exchanges in which each mentor teacher visited her or his protégé's school for one entire school day to provide at-school assistance. Each protégé teacher also visited her or his mentor's school for one entire school day.

Although the professional development plans and interests of the school district administrator and project staff heavily influenced the project, two additional principles strongly directed the project. First, the project was guided by adult learning theory by focusing on active, collaborative, and use-based approaches to learning (Knowles et al., 1998). Second, although a rough sketch of the project was developed at the start, each phase of the project flowed from what was learned from the teachers at various stages and what teachers felt would best facilitate their learning and mentoring experiences. For example, we had not originally intended to provide elaborate computer training to the teachers for the chat-room component of the project; when we learned that extensive training was necessary, however, we provided it.

Instruments and Administration

Mentors. Mentors completed the *Mentor's Aptitude Inventory* nine times (Times 1–9) across the 1-year project: before and after each of the four workshops they attended, and a final post-administration at the end of the school year. Teachers rated their aptitude on a 5-point Likert-like scale from 1 = *very little knowledge and skill* to 5 = *quite adequate knowledge and very skillful* (e.g., “identify problems or issues related to mentoring teacher protégés”). The inventory was comprised of the following eight subscale competency areas: (a) developing performance-coaching skills, (b) displaying sensitivity to individual differences, (c) modeling and coaching effective classroom-management standards, (d) modeling and coaching effective teaching standards, (e) nurturing the novice, (f) promoting collaborative learning, (g) shaping professional relationships, and (h) understanding the mentoring role. Each subscale was represented with five items. See Table 1 for sample items from the mentor and protégé instruments.

Protégés. The protégé teachers completed the *Mentoring Functions Scale* (MFS) seven times during the intervention; before and after the three mentorship-focused workshops (i.e., December, January, March) they attended and at the end of the school year. The MFS consisted of 21 items and two subscales assessing: (a) psychosocial support (e.g., acceptance, role model, counseling, friendship; 12 items) and (b) career mentoring functions (e.g., sponsorship, exposure and visibility, coaching, protection, challenging assignments; 9 items). Protégés were asked to read each item and report on the extent to which it described their mentoring

Table 1 Example Items From Each Subscale for the Mentor and Protégé Instruments

Instrument	Subscale	Item
Mentor	Developing your performance-coaching skills	Develop the skills of observing and collecting specific, descriptive data about performance of protégé.
	Displaying sensitivity to individual differences	Know about ethnicity, gender, class, and cultural diversity and its implication in the classroom.
	Modeling and coaching effective classroom management standards	Understand the major classroom principles associated with effective practice in managing the classroom.
	Modeling and coaching effective teaching standards	Know the components of successful teacher mentoring.
	Nurturing the novice	Provide emotional support during times of personal or career stress and guidance for decision making.
	Promoting collaborative learning	Apply problem-solving approach in dealing with conflict or performance issues that might arise
	Shaping professional relationships	Understand the changing role of teachers in a knowledge-based world.
	Understanding mentoring role	Know the mentor role, tasks, and responsibilities.
Protégé	Psychosocial	My mentor has encouraged me to try new ways of behaving in my job.
	Career	My mentor has shared history of his/her career with me.

Note. Anchors for the mentor instrument range from 1 = *very little knowledge and skill* to 5 = *quite adequate knowledge and very skillful*, and for the protégé instrument from 1 = *to a very slight extent* to 5 = *to a very large extent*.

relationship using a 5-point Likert-like scale from 1 = *to a very slight extent* to 5 = *to a very large extent*.

Data Analysis

Mentor instrument validation. Previous instrument validation with a similar population (i.e., educators) showed high internal consistency for the subscales and agreement among experts on content validity of the Mentor's Aptitude Inventory (Podsen & Denmark, 2000). The instrument was shortened for our study to reduce participant burden and to remove items that were not meaningful to our project (instrument reduced from 59 to 40 items). The mentor instrument validation process included a small pilot study and expert content validation, internal consistency reliability measures, and item-to-total correlations.

Mentor instrument pilot study and expert content validation. Fifteen physical education teachers with mentor experience who were not part of this project participated in the pilot study and completed the 59-item instrument. Internal consistency reliabilities and corrected item-to-total correlations were calculated. Three physical education pedagogy faculty members with expertise in mentorship also reviewed the instrument and rated the items on each scale from most to least relevant for teachers participating in a mentorship experience in a physical education setting.

Results showed the subscales on the mentor instrument had high levels of internal consistency, ranging from .84 to .96. Five items were selected for each of the eight scales reducing the instrument to 40 items based on corrected item-to-total correlations for the items on the subscales along with recommendations from the three experts on the most applicable items.

Mentor final instrument analyses. Internal consistency scores were calculated for the 40-item mentor instrument and for each of the eight subscales across the nine instrument administrations in order to determine whether the instrument produced reliable data in this population of mentor teachers. Corrected item-to-total correlations were calculated for each item on the instrument and for the eight subscales for each of the nine instrument administrations.

Mentor instrument analyses. Paired *t* tests were performed for the overall scores (pre- and post-workshop) for each of the four workshops that mentors attended (i.e., Time 1 vs. 2, 3 vs. 4, 5 vs. 6, 7 vs. 8) to determine whether the mentorship professional development activities enhanced perceptions of mentor competency. The experiment-wise error rate was controlled by dividing the alpha level (.05) by the number of *t* tests pre- and post-workshop comparisons ($k = 4$; $p < .0125$). *T*-test results provided data on changes occurring related to each individual workshop.

Protégé instrument validation. Validity and reliability of the scores produced by the 21-item protégé instrument had been previously established with educators (Noe, 1988). In our project, internal consistency scores were calculated for the overall protégé instrument and the instrument's two subcategories across the seven instrument administrations in order to assess the internal consistency of the scores in this population of protégés. Corrected item-to-total correlations were also calculated for the overall protégé instrument, as well as the two subscales for each

of the seven instrument administrations. Sixteen teacher educators also reviewed items for appropriateness for physical education protégé teachers, as well as classified the items into the two subscales.

Protégé instrument analyses. Paired *t* tests were performed to investigate pre- and post-workshop changes for the three mentorship-related workshops that protégés attended (i.e., Time 3 vs. 4, 5 vs. 6, 7 vs. 8). Again, the experiment-wise error rate for *t* tests run by pre- and post-workshop comparisons ($k = 3$) was controlled (i.e., $p < .017$). Note that the protégé administration time begins at Time 3 because they joined the mentorship professional development activities at Workshop 3 (December) and to correspond with mentor times. In addition, descriptive statistics were calculated for both instruments to better understand mentor competencies and protégés' views of the mentoring relationships.

Results

Mentor Final Instrument

Internal consistency reliability assessments showed a high level of internal consistency among all items on the mentor aptitude scale; overall Cronbach alpha coefficients were .94 for the pretest and .98 for the posttest. Each of the eight scales also demonstrated a high level of internal consistency, with alpha values ranging from .95 to .99 across instrument administrations. Corrected item-to-total correlation results suggest that items were measuring what the total score and subscales were measuring. The overall instrument's median item-to-total correlation was .77 across administrations. For the eight subscales, the median values for the item-to-total correlations ranged from .78 to .83 across the nine administrations.

Mentor Instrument Results

From pre- to post-workshop for Workshop 1 (i.e., Time 1 vs. 2), the *t* test indicated a reduction in mentor self-reported competency, $t(14) = 3.33$, $p < .01$, with the mean falling from 137.73 ($SD = 23.76$) to 123.07 ($SD = 24.12$). For the other three workshops, there was a general upward trend in teachers' self-reported competency, suggesting that the workshops were effective in increasing mentors' competencies. Pre- and post-workshop for Workshop 2 showed increases in mentor self-reported competency, $t(14) = 4.66$, $p < .01$. There was a slight decrease in mentor self-reported competency, $t(14) = 3.08$, $p < .01$, pre- and post-workshop for Workshop 3. Perceptions increased again pre- and post-workshop for Workshop 4, with competency ratings increasing $t(14) = 2.92$, $p < .01$. Figure 1 depicts the general upward trend in mentors' overall self-rated aptitude graphically.

Protégé Instrument Validation

The protégé instrument also produced internally consistent scores in this population, with overall pre- and post-workshop internal consistency reliability test scores of .96. The internal consistency scores for the two subscales of the protégé instrument ranged from .85 to .96 across the seven administrations. The corrected item-to-total correlations on the protégé instrument support the ability of the items

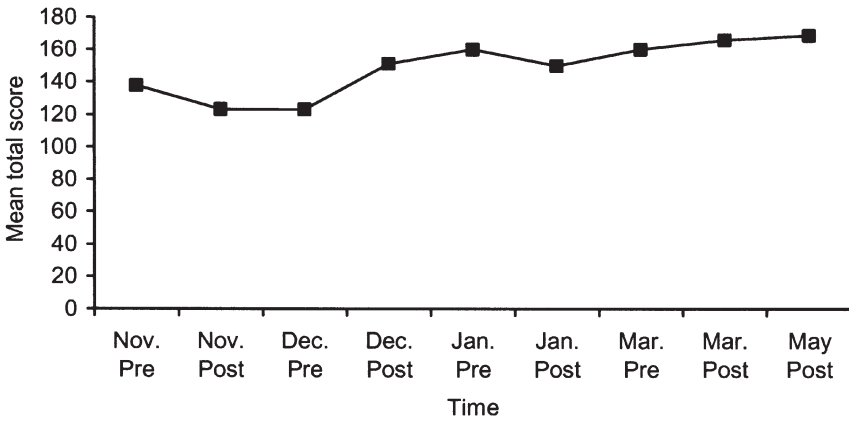


Figure 1 — Changes in mentor aptitude over time shown by workshops attended. Months on time axis are the months in which mentoring workshops were held; “pre” and “post” indicate that instruments were administered before (pre) and after (post) mentoring workshops.

to measure what the overall instrument and subscales are measuring. The median item-to-total correlation for the overall instrument across the seven instrument administrations was .63. The median item-to-total correlation for psychosocial support was .58, whereas the career-mentoring function subscale median score was .77 across the seven instrument administrations. The expert teacher educators reported the items as appropriate for measuring physical education teacher protégés’ perceptions of the mentoring relationship, and they agreed to a great extent (91%) with the classifications into subcategories.

Protégé Instrument Results

From pre- to post-workshop for the first mentoring-focused workshop that protégés attended (i.e., Time 3 vs. 4 for Workshop 3), there was a large increase in their views of the mentoring relationship with significant pre- and post-workshop differences for the instrument, $t(14) = 4.74, p < .01$; the pre-workshop total mean was 38.53 ($SD = 17.27$); and the post-workshop total mean was 62.93 ($SD = 18.54$). Protégés scores were then maintained throughout the intervention, with no significant differences found for Workshops 4 and 5. Figure 2 depicts protégés’ views of the mentoring relationship over the seven test administrations.

Discussion

In order to realize the potential outcomes of a mentoring program, effective mentors are needed; this investigation revealed some insights into how mentor skills can be enhanced. The first research question guiding this study was to analyze how a reform-based mentoring program can influence experienced teacher mentors’ perceived self-competence in mentoring newer teachers. One important finding here is that reform-based professional development can be effective in enhancing

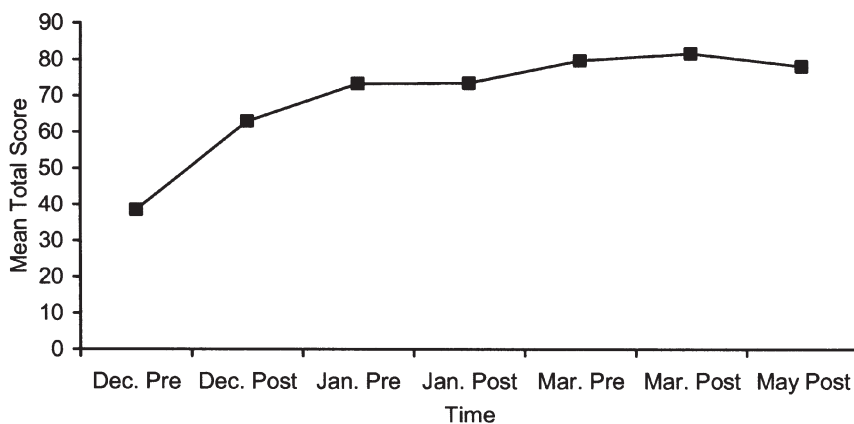


Figure 2 — Changes in protégés' perceptions of the mentoring experience over time shown by workshops attended. Months on time axis are the months in which mentoring workshops were held; "pre" and "post" indicate that instruments were administered before (pre) and after (post) mentoring workshops.

mentors' perceptions of their mentoring skills. As a general trend, the mentor teachers were successful in increasing their self-perceived abilities to mentor newer teachers in a new curriculum steadily over time. The fact that the protégés reported similar positive perceptions of the outcomes of the mentor relationships suggests that the mentor teachers not only increased their feelings of self-competence, but that their feelings of competence might have been justified because the protégés identified similar feelings regarding the influence of their mentors.

There were thought-provoking exceptions to the generally positive trend, however. The two major drops in mentors' perceived mentoring aptitude in the current study coincided with two knowledge-intensive workshops. First, after the initial mentoring workshop in which the mentors started to learn how to mentor newer teachers, the mentor teachers might have realized how little they actually knew about mentoring because their confidence dropped about 10%. Perhaps they were questioning their abilities and were fearful that they would fail or be perceived as illegitimate by their soon-to-be protégés. This is significant because it reveals a potential emotional juncture that prospective mentors might experience. In other words, agreeing to serve as a mentor might mean one thing, but having to actually learn and do it might be a bit more unsteady. Those arranging or supporting mentorship programs among teachers should be aware of these potential dips in the confidence of a teacher who is learning to be a mentor as they get deeper into the process. Someone supporting the mentor's development might encourage her or him through this period of self-doubt and point out tangible attributes they can share with their future protégé.

The teachers learning to be mentors also reported a drop in their perceived competence after Workshop 3. Workshop 3 included three main features: continuing discussions of EPEC and implementation, the introduction of pedometers, and

computer technology. After this workshop, mentors indicated a significant dip (i.e., 6%) in self-reported competence in mentoring. We hypothesized that this dip in self-competence was likely attributed to the mentors' general unfamiliarity with pedometers. Previously, pedometers had not been available to teachers in the district, and teachers' unfamiliarity with them was evident during Workshop 3. Most of the mentors had not seen or used a pedometer before. Therefore, it seems likely that mentors felt less confident in their ability to provide mentoring to a protégé who knew as much or more about pedometers than they did. In many cases, the mentor and protégé both had little experience, so they learned and experienced pedometers together. In these cases, it was a collaborative and problem-solving relationship. In other cases, the protégé knew how to use pedometers from prior workshops or from their recent teacher education programs, so mentors' experience and knowledge lagged compared with their protégés'.

Mentors lacking sophisticated content knowledge compared with their protégés might point to an important issue in mentoring. If a mentor lacks content, curricular, or pedagogical knowledge, she or he might perceive herself or himself to be less competent and question her or his ability to mentor a newer teacher. Whether this is significant depends on the mentoring program. If the program is intended to have teacher mentors help their newer counterparts navigate school culture, classroom management, and the like, then possession of rich and sophisticated content knowledge might not be essential for the mentor. On the other hand, if the mentoring program is designed for the mentor to help the protégé learn to teach content better, implement newer technologies, or learn and implement new curriculum, then content knowledge might be extremely important for the mentor to possess. In their review of teacher mentoring, Smith and Ingersoll (2004) noted that this might be significant in that mentors should possess the knowledge, skills, and competence in the areas in which they will be providing mentoring to newer teachers for the mentoring process to have the greatest impact. In this study, we found that if teachers lacked the subject-matter knowledge in question, then they were more likely to question their abilities to be mentors. Therefore, selecting mentors for new teachers or for teachers in various curriculum projects might not be as simple as assigning an experienced teacher. It is important to consider the aims of the mentoring project and to determine whether the potential mentor has exactly the knowledge, skills, and competencies to assist the newer teacher with the specifics of the situation.

The second research question guiding the study centered on understanding how a mentor might influence a newer teacher's perception of teaching and the mentoring process. We found that an experienced teacher mentor can play a critical and empowering role in improving a newer teacher's perceptions of teaching and the mentoring process. Specifically, after the first mentoring workshop, protégés reported a large increase in positive psychosocial dynamics with their mentors and in the perception that their mentors could assist their teaching and career development. These positive beliefs were then maintained over time. The protégés reported nearly a twofold increase in both variables, suggesting that they believed the mentors played an enormous role in helping them enter the profession and learn to implement the EPEC curriculum, whether as brand-new teachers, teachers transferring from a classroom setting to the gymnasium, or from a secondary setting to the elementary level.

Perhaps more significant than what a single program intervention on mentoring can tell us, however, is what this investigation revealed about successful professional development. Why was this professional development experience successful in changing teachers' perceptions of mentoring when many interventions are not? To understand this difference, it might be useful to examine Garet and his colleagues' (2001) discussion of traditional and reform types of professional development. Traditional interventions are often characterized by structured meetings that are typically held off-site and with little or no continuity and follow-up support. Although well intentioned, these traditional interventions frequently fail. This successful mentoring program was based on the tenets of what Garet et al. (2001) call reform types of professional development (or what Hargreaves and Dawe [1990] refer to as "collaborative professional development" and Armour and Yelling (2004) as "professional learning"). In contrast to traditional offerings, reform professional development is focused on connecting innovation more closely to the context in which it will occur, perhaps even holding meetings during the school day at the teachers' home schools. Reform professional development involves more collegial and sustained interactions, as well as a focus on active learning by participants that share similar school contexts, grades, subjects taught, and personalities.

Our mentoring program was representative of a reform development opportunity. To begin with, we partnered mentors with protégés who had similar types of schools, grades, subjects, and personalities. We matched older and more experienced teachers with the older but newer teachers in the project. We matched younger and enthusiastic mentors with younger and enthusiastic protégés. The year-long program offered frequent training with follow-up support at each teacher's school. Teachers worked together in mentor-protégé teams on a weekly basis, building emotional and professional relationships often through chat-room communications and on-site school visits. Active learning opportunities were a significant part of every meeting, and all activities (e.g., mentor-led discussions, peer teaching, peer coaching) were planned with adult learning theory (e.g., Knowles et al., 1998) in mind. Although far from perfect, the mentor program based on these principles was viewed by the mentors and protégés as effective in influencing how mentors felt about their roles as mentors and how protégés felt about the role their mentor played in their thinking about teaching and career progress.

Garet and his colleagues' (2001) recommendations for reform-type professional development are supported by Armour and Yelling's (2004) recent work in the United Kingdom that is specific to physical education. Working with practicing teachers, they identified a number of factors that teachers reported contributed effectively to their professional development. Teachers preferred programs that were practical and seen as relevant to their setting. These programs needed to be delivered effectively and provide "workable," ready-to-use ideas. Finally, the teachers participating in Armour and Yelling's study preferred thought-provoking ideas that gave pause for reflection, as well as time to share their thoughts with other teachers. Our study reinforces those findings by showing that protégés valued the coaching and practical ideas that were content and context specific from their mentors. In this study, we also showed that psychosocial support and the ability to share thoughts with other teachers was integral to the positive feelings expressed by protégés and mentors.

Limitations

One limitation of the study that deserves mention is the purposive nature of participant selection and the small sample size. This instrumentation should be used again with a larger participant pool to further explore the viability of the factor structure of the instruments with physical education teachers. In addition, multivariate approaches should be used to investigate the mentoring process. Further, the absence of a control group makes it difficult to determine whether the effects for mentors and protégés were a result of the mentoring activities or the involvement in the curriculum project in general. A more solid experimental design in which mentors and protégés could be randomly assigned to control and intervention groups combined with larger subject pools and student learning assessment as another measure of program effectiveness would yield richer data. Because of these considerations, generalization of our findings to different mentor–protégé contexts should be done cautiously.

Future work

Other worthwhile avenues for continued study include qualitative research designs that follow teachers throughout the mentor process to determine how mentors thought at different points across the year, what protégés specifically thought they learned from their mentors at various junctures, and greater and richer detail about the mentors' feelings of competence and the protégés' perceptions of teaching and mentoring. Other similarly useful studies would include examining the link between mentoring programs and the effective implementation of particular curricula, as well as a longitudinal exploration of the effects of mentoring programs on teacher retention. A qualitative viewpoint would allow for an analysis of the specific ways in which the protégés' felt their mentors aided their EPEC learning and implementation. The protégé scale yielded information about the relational dynamics between the protégé and mentor and how the protégé felt that his or her mentor benefited him or her from a more general career perspective. It would have been worthwhile to know more concretely how mentors can assist newer teachers' day-to-day teaching. Additional quantitative studies could use self-efficacy theory to investigate both mentor and protégé technology and curricular efficacies as they move through a mentoring process. Again, although this study was useful in understanding how mentors and protégés experience the mentoring process, it also raised many questions and possible future studies in this area.

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