A Dynamic Pedagogy of Physical Education Teacher Preparation: Linking Practice with Theory
美國體育碩士課程新動態：從實踐到理論

Christopher R. EDGINTON[1] Beth KIRKPATRICK[2]
Rick SCHUPBACH[3] Carol PHILLIPS[1]
Ming-kai CHIN[1] Peter CHEN[4]

[1] School of Health, Physical Education and Leisure Services, University of Northern Iowa, USA

[2] POLAR Electro, Inc. Grundy Center, Iowa, USA

[3] Grundy Center Community Schools, Grundy Center, Iowa, USA

[4] Dunedin College of Education (Now merged with University of Otago) NEW ZEALAND

克裏斯多夫．艾占頓[1] 貝絲．柯克派翠克[2] 瑞克．舒巴赫[3]
卡羅爾．菲力浦斯[1] 錢銘佳[1] 陳景星[4]

[1]美國北愛荷華州大學健康體育及休閒服務學院

[2]POLAR Electro Inc., 美國愛荷華州格蘭迪中心

[3]美國愛荷華州格蘭迪中心社區學校

[4]新西蘭達尼丁教育學院

Abstract

Physical education teacher preparation programs are being called into question, failing to inspire, motivate or adequately prepare the needs of learners in the 21st Century. The application of the technical-rationality model for preparing teachers, where gaining theoretical knowledge as a prelude to practice, is being questioned. The problem is that the teaching of theoretical knowledge has not been adequately tied to actual practice of physical education in an effective fashion. This paper presents a frame work for a unique master's degree program focused on preparing physical education teachers with an emphasis on technology. Known as the POLAR Scholar program, the uniqueness of the program emerges from the unique blend of seven curricular components in a holistic fashion. These include: 1) linking practice with theory, not the reverse; 2) creation of a total immersion, contextually based learning environment; 3) emphasis on the use of technology; 4) daily ongoing engagement with a master physical education teacher; 5) opportunities to use reflection as a strategy to improve professional practice; 6) extension of learning environments to partner organizations beyond the school, leading to greater community engagement; and 7) recruitment and selection of students to operate within cohort groups.

Keywords: physical education, pedagogy, practice with theory, immersion, contextually-based, technology, community, heart rate monitoring, partnership

摘 要

面對21世紀教育的發展趨勢，體育教師的培養面臨挑戰，如何鼓舞，激勵和迎合學生的需要成為關注的重點。以技術理性為主，從理論到實踐的教師培訓模式正在受到質疑。問題是，理論知識在體育教學中並沒有得到有效的實踐和應用。本文闡述了一種獨特、創新的大學與社區合作的體育碩士培訓課程 -- POLAR Scholars，由美國北愛荷華大學，格蘭迪中心社區學校和芬蘭Polar Electro, Inc.合辦。該課程運用以科技為主的沉浸式教學方法，使用POLAR心率監控器為依據來觀測小學生體育課的運動負荷量，提高學生終身體育與健康意識。課程設計以綜合全面的培訓模式作為重點，包括七個方面：1) 參加課程培訓的教師從實踐到理論來獲得的直接體育教學經驗，而不是理論到實踐；2) 採用沉浸式教學方法在學校和社區進行實踐學習；3) 科技教學手段的實際運用；4) 實習教師與輔導教師的之間的日常協作與夥伴關係；5) 通過實踐學習，提高反思能力；6) 學校和社區相結合，提供與社區交流的機會，讓學生走進社區進行實踐學習; 7) 每年進行全國的招募，審核和挑選優秀的學生參加課程培訓。

關鍵字：沉浸式教學，關聯教學，科技教學，體育教育，創新改革，心率監控，學校與社區，夥伴關係

Introduction

Throughout the world, physical education programs are being reduced, diminished, and even eliminated at a time when obesity and being overweight among children, youth and adults is at epidemic proportions. At the same time, physical education teacher preparation programs are being called into question, failing to inspire, motivate and/or adequately prepare new teachers to respond to the needs of learners in the 21st Century (Edginton, 2007; Edginton, Kirkpatrick, Schempp, & Jones, 2008; Tinning, 2004). Further, greater demands for accountability in the classroom, has required the rethinking and subsequent refocusing of curricular strategies in physical education. Jefferies (2008) in a succinct fashion has identified directly the challenge.

… sometimes you wonder what you really learned about physical education teaching during those college years. Most of us who teach in college preparation programs wonder the same. We ask ourselves what should we do to best prepare future physical educators? What knowledge and skills do student physical education majors really need? Is the content of our classes appropriate? And, most importantly, is what we do in our classes really making a difference? (p. 1)

Imig and Switzer (1996) have strongly suggested that there is a profound need for ". . . changes in the form and functions of teacher education" (p. 213). As Korthagen (2001) has written, during the second half of the 20th Century, the democratization of education led to the need to prepare a large number of teachers and equip them with required professional knowledge. What emerged from this demand was an approach to teacher education that supported the idea that the acquisition of a body of professional knowledge should precede practice. As Clandinin (1995) writes, this approach to preparing teachers, called the "sacred theory-practice story," conceived teacher education as the translation of practice of theory on good teaching." Schön (1983) calls this the "technical-rationality model" (p. 21) and is built on three assumptions as follows: 1) theories help teachers to perform better in their profession; 2) these theories must be based on scientific research; and 3) teacher educators should make a choice concerning the theories to be included in teacher education programs.

Application of the technical-rationality model for preparing teachers where gaining theoretical professional knowledge as a prelude to practice has been criticized and, in fact, may not function effectively (Deng, 2004; Imig & Switzer, 1996, p. 223; Korthagen, 2001, p. 3; Lortie, 1975; Sprinthall, Reiman & Thies-Sprinthall, 1996; Zeichner & Gore, 1990, p. 343; Zeichner & Tabachnick, 1981). These authors suggest that many concepts learned in the classroom are not translated effectively in terms of practice. Further, it is suggested that the role of practice may be a far more pervasive influence in the process of socializing individuals to their role as a teacher (Loughran, 2002). In addition, the frameworks of college and university physical education teacher preparation programs and the conditions within which they operate may, in fact, ". . . establish limits on the range of options available to both teacher education students and teacher educators" (Zeichner & Gore, 1990, p. 343). Also, there is a tremendous "transitional shock" for most new physical education teachers when

attempting to adjust to the current practices found in the schools within which they are located. In fact, most new teachers are required to gain on-the-job training to effectively fulfill their role as a physical education teacher.

What, then, is the problem? Perhaps teaching of theoretical knowledge has not been adequately connected to the world of practice (Vick, 2006). Researchers have suggested that there are multiple forces that impact on teacher education, calling for a need to build closer relationships between institutions of higher education and the schools where practice occurs (Batumfield & Butterworth, 2007; Imig & Switzer, 1996; Scharmann, 2007). In fact, they suggest that the professional body of knowledge in teacher education comes at the confluence of what we derive from professional practice and what constitutes theoretical knowledge. Frazier (1993) and Imig and Switzer (1996) suggest that it is important for " . . . higher education faculty and public school staff to work together to improve teacher preparation opportunities while simultaneously advancing education programs for elementary and secondary students" (p. 220).

Is the transfer of professional knowledge without an adequate tie to actual practice in the area of physical education contributing dramatically to the failure of physical education programs? Is the blending of theoretical knowledge and that drawn from professional practice sufficient enough to prepare physical education teachers? Or, is there a need for a new model of pedagogy in the preparation of physical education teachers that links practice to theory rather than the reverse? Again, Jefferies (2008) offers additional perspectives to this dilemma, stating that the immediate challenge is:

How to teach a meaningful . . . [physical education] . . . class? This year is going to be different. In the past, I've gone about it in what I suspect is the traditional way: A text, assigned readings, lectures, class discussions, quizzes, papers, presentations, occasional guest speakers, and so forth. It wasn't bad, but sitting in class, reading and writing wasn't the reason my students likely chose PE teaching careers. I don't want to bore them. I want to begin a transformation process that will move them towards the motivated, enthusiastic, and effective future physical education teachers our kids need and deserve. (p. 1)

Indeed, Jefferies (2008) analysis calls for the need to transform dramatically the way in which physical education teachers are prepared. The need for learning in context is evident. Can, in fact, practice be linked to theory rather than the reverse? Can a more effective school-university partnership be built to advance the preparation of physical education teachers? Again, as Imig and Switzer (1996) have stated, ". . . there is widespread acceptance of the belief that teacher preparation programs will be better to the extent that they are linked to the schools and those who practice in the schools" (p. 220). It has been noted that ". . . decisions concerning the education of teachers are the shared responsibility of university faculty, practitioners, and other related professionals" (The Renaissance Group, 1993). One may add that this responsibility is one to be shared with the community as a whole. Are the traditional strategies employed aimed at linking theory with practice in clinical settings such as observations, practicum's, field experiences, and even student teaching sufficient to prepare knowledgeable, skilled, highly motivated and energetic physical education teachers? Is there a better way?

A New Pedagogy to Prepare Physical Education Teachers

In 2004, the University of Northern Iowa's School of Health, Physical Education and Leisure Services, in collaboration with Polar Electro, Inc., and the Grundy Center (Iowa) Community Schools created a unique masters degree program focused on preparing physical education teachers with an emphasis on technology (short form known as the POLAR Scholar program). A contextually based program of total immersion, the program offers unique school and community learning opportunities (Edginton, 2004, Vickers, Harris, & McCarthy, 2004, Ziebarth & Bovill, 2008). With a strong emphasis on infusing technology into the learning environment, the program effectively links practice with theory. Rather than present theoretical ideas and concepts first, students are immersed in practice and are involved in a learning environment where they are enabled and encouraged to draw on their professional experiences and then to apply abstract theoretical knowledge to define and make sense of their teaching interventions with children and youth.

Students participating in the program are recruited and selected as entry level physical education teachers in the Grundy Center Community Schools system and are designated as POLAR Scholars. The Grundy Center Community School system is at the forefront of the application of technology in the teaching of physical education and serves as a PE4Life Academy. Thus, POLAR Scholars are provided with an ideal learning environment where technology has been embedded, including the use of heart rate monitors, pocket PC's, and fitness assessment systems which are an integral part of daily lesson plans. Students are exposed daily to effective teaching strategies, an innovative curriculum design, use of technology, and research applications and theoretical knowledge that is tied to the POLAR Scholar's actual, current teaching experience in the classroom as well as outreach activities in the community.

The learning environment has been crafted in such a way as to engage and involve students in a dynamic fashion. Utilization of progressive and futuristic teaching strategies is featured, as well as the opportunity to teach using the STAR TECH PE framework. As one POLAR Scholar has noted, ". . . the program has opened my eyes to the endless possibilities of quality programming in physical education" (University of Northern Iowa 2006, p. 1). Daily, students are linked to a master physical education teacher who serves to mentor, guide and instruct POLAR Scholars. In addition, ongoing and continuous conversation, dialog and reflection are in evidence among and between POLAR Scholars, other teachers, school administrators, university faculty and community members. Also, in addition to each POLAR Scholar's daily teaching responsibilities, they are provided with opportunities to plan, organize and develop community programs, participate in faculty and board meetings as well as join in, and often lead, community activities. POLAR Scholars have the opportunity to participate in numerous in-service and developmental activities as well as provide instruction to physical education teachers from other school systems in the use of technology. The resources of the partnering organizations are blended in such a fashion as to provide a state-of-the-art academic and learning environment that promotes a quality of excellence and commitment to the endeavor by all. POLAR Scholars are required to live in Grundy Center, and as such, become an integral part of the community. Living and learning in a caring and supportive environment promotes a sense of meaningfulness, relevance and connectivity to the learning experience (Cooper, 2007). As one POLAR Scholar has commented, ". . . extensive community outreach has provided me an opportunity to work with the Grundy Family YMCA, Grundy County Memorial Hospital, Grundy Center Community Schools, and many local volunteers in a collaborative fashion (University of Northern Iowa, 2006, p. 4)

Advanced graduate instruction is provided by a number of the world's best physical education faculty drawn from North America, Asia, and Europe. As noted by a POLAR Scholar, ". . . the professors and others that I have worked with through this program have been amazing . . . their knowledge, character and willingness to assist my educational journey is unbelievable" (University of Northern Iowa, 2006 p. 2). More structured learning opportunities where students are enabled to link practice with theory and are provided in the POLAR Scholar's teaching environment include: 1) philosophical perspectives in physical education; 2) technological applications in physical education; 3) curriculum and design in physical education; 4) effective teaching in physical education; and 5) contemporary issues in physical education. POLAR Scholars are also provided with the opportunity to attend selective courses on campus including research methods and statistics. In order to complete the program, the POLAR Scholars engage in a research project that enables them to validate the use of technology in physical education.

Finding our Uniqueness: Blending of Elements in a Holistic Fashion

The uniqueness of the POLAR Scholar program emerges from a unique blending of several curricular components in a holistic fashion. Taken by themselves, they do not produce the synergistic impact that was sought in the development of a new pedagogy for preparing physical education teachers at the graduate level. Together, they produce a dynamism that promotes an enthusiastic response to the creation of a dynamic learning environment that draws from the application of best professional teaching practices.

Figure 1 presents each of the components that have contributed to the success and effectiveness of the curricular design as a new way of preparing physical education teachers. These elements include an emphasis on blending the following: 1) linking practice with theory, not the reverse; 2) creation of a total immersion, contextually based learning environment; 3) emphasis on the use of technology; 4) daily ongoing engagement with a master physical education teacher; 5) opportunities to use reflection as a strategy to improve professional practice; 6) extension of learning environments to partner organizations beyond the school, leading to greater community engagement; and 7) recruitment and selection of students to operate within cohort groups.

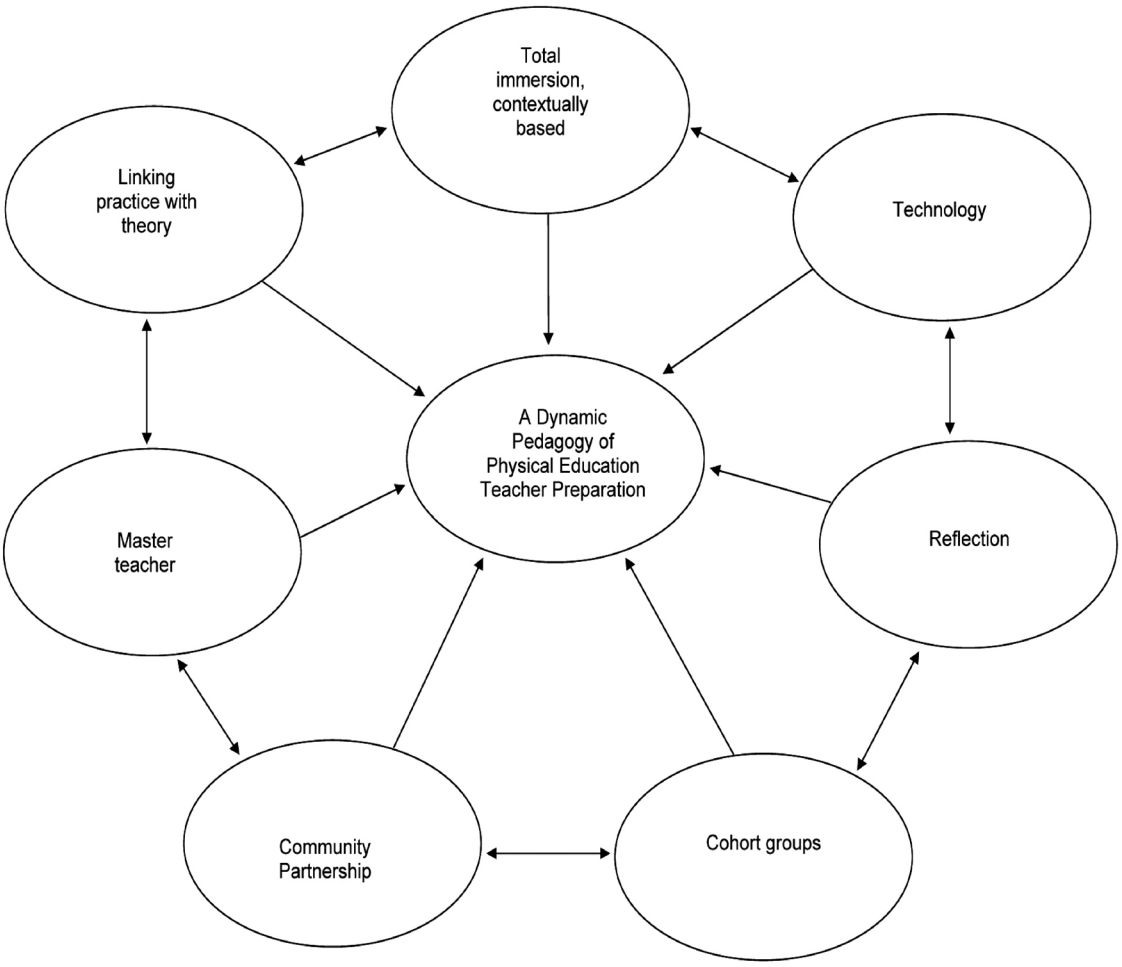

Figure 1
A Dynamic Pedagogy of Physical Education Teacher Preparation

Following is a description of each of the seven (7) elements which have been blended holistically to create a unique learning environment within which to prepare physical education teachers to operate effectively in the 21st Century.

Linking Practice with Theory. Physical education teacher education programs often consist of a collection of fragmented theoretical courses with limited connection to practice (Chen, Rovegno, & Iran-Nejad, 2003). As mentioned, the most dominant approach is one of teaching theory and then providing opportunities for students to observe, engage in field experiences, and ultimately, serve as a student teacher. This approach assumes that individuals will apply the theoretical information they have learned to the practical settings with which they are engaged. It assumes that there is a transfer of knowledge from the classroom to such experiences (Korthagen & Kessels, 1999, p. 4). As Ben-Peretz (1995) notes:

The hidden curriculum of teacher education tends to communicate a fragmented view of knowledge, both in course work and in field experiences. Moreover, knowledge is "given" and unproblematic. These views of knowledge are likely to become quire problematic as teachers gain experience. (p. 546).

An alternative model of preparing physical education teachers is known as the "realistic approach" or one where practice is linked to theory rather than the reverse (Korthagen & Kessels, 1999, p. 6). In this article, we have expanded on the realistic approach, offering a "holistic/ realistic" model of physical education teacher preparation. Traditional approaches to physical education teacher preparation are the aforementioned technical-rationality model and the other is known as the application model which heavily relies on reflection. Although criticized for lacking scientific rigor, this latter approach to teacher preparation is ". . . conceptualized as an ongoing process of experiencing practical teaching and learning situations (ibid). Framed from a constructivist view point of education, this approach suggests that the creation of knowledge occurs as the learner interacts with objects (physical, social and abstract), teachers and other learners. Key factors are the heightening of one's intellectual curiosity, experimentation and cooperation.

The holistic/realistic model to physical education teacher preparation assumes that professional practice must be integrated or linked with theory rather than the reverse. It relies heavily on the realistic approach, recognizing and advancing the concept that physical education teacher preparation programs are more effective when deeply embedded in professional practice. It recognizes that the professional body of knowledge comes from professional practice and theory can be used to support, explain and organize the experiences of physical education teachers in the classroom. The issue is one of not whether physical education teacher preparation should start with either ". . . theory or practice instead of the more important question of how to integrate the two in such a way that leads to integration within the teacher" (p. 4). Such an approach to preparing physical education teachers brings into question the way in which teachers are developed and ". . . the nature of the relationship between teacher cognition and teacher behavior" (ibid)as a basis for crafting a new paradigm for physical education teacher preparation. This proposition, in fact, calls for a new dynamic pedagogy of physical education teacher preparation; one which more effectively links practice to theory and integrates holistically other strategies that may lead the more effective preparation of physical education teachers.

Total Immersion, Contextually Based. Contextually based learning has been supported historically by such notable educators at Freire (1970), Knowles (1984), Mezirow (1997), and current researchers (Nygaard, Hojlt & Hermansen, 2008; Vermunt, 2005). As a way of promoting social equality, these individuals have suggested that the traditional educational model of banking knowledge in passive learners by expert teachers does not encourage real learning. Real learning occurs best when it is derived from or framed from actual life experiences. Knowles, for example, suggests that experience is a major resource for learning and that adult learners are more problem-focused than subject-oriented. Thus, by immersing students in an ongoing rich professional experience creates a context that has the potential to make learning more powerful and meaningful for the individual. Total immersion contextually based learning is a transformational process aimed at changing the frame of reference for how we understand our experiences (Mezirow, 1997, p. 5). Real life experiences helps the student define and shape their learning experiences and in context, individuals can move toward frames of references that are "more inclusive, discriminating, self-reflective, and integrative of experience" (Ibid)

A key feature of the POLAR Scholar program is that it is a curriculum of total immersion offered in the contextual setting of an elementary, middle and high school setting. The focus of the program involves creating a transformative learning environment where students are learning the craft of teaching physical education in the context of the school environment on a full time basis. Students are recruited and selected to assume the role as serving as a physical education teacher in the Grundy Center Community School District. They are embedded on a daily basis in the school and in a wide range of community activities.

The transformational nature of the total immersion, contextually based environment provides relevance, meaningfulness, and the ability to apply immediately knowledge, applied or engineered skills or professional values gained for students involved in the program in this

dynamic learning setting. Practical knowledge replaces abstract theoretical constructs that are often meaningless without a context for application. Being embedded in the school and community provides a real professional experience. Simulated learning experiences are replaced by ones with consequences in terms of teaching strategies, interventions and learning outcomes. Also, being situated as a teacher in the classroom, or as a community facilitator, enables students to act and then engage in the process of reflection with an eye toward improving their performance with students in the classroom.

Technology. An essential component in the development of the graduate program has been the inclusion of the use of technology in the teaching of physical education. The implementation in the use of technology in teaching physical education has been reported as an effective means of tracking physical activity in field settings (Finkenberg, 2008; Gilliam, Freedson, Greenen, & Shahraray, 1981; Janiu, 2002; Kirkpatrick, 1987). In fact, the use of heart rate monitors as a way of incorporating technology into physical education was featured in the late 1980's in Life magazine (Hollister, 1987). Further, the use of technology in teaching physical education to validate activity counters has been reported by Sallis, Buono, Roby, Carlson, and Nelson (1990). Welk and Corbin (1995), Janz (1994), Sallis, et al. (1996), Morgan, Pangrazi, and Beighie, (2003), and Trost (2007) have also discussed the use of technology in the context of teaching physical education and measuring physical activity.

Such research studies have endorsed the use of technology in the teaching of physical education and reinforced its value in promoting greater accountability, measurement, the provision of objective evidence and the opportunity for individuals to self-monitor to see how active they are and how they can individualize the intensity of their participation. There has always been a disconnection between what the physical education instructor may observe and what is actually occurring within the student. Through the use of technology, the physical education teacher is in a better position to more effectively design exercise prescriptions and lessons for each individual. Researchers have noted that quality physical education programs should encourage self-monitoring, individualize intensity of activities and focus the student on the process of doing their best rather than on the product (Corbin & Pangrazi, 1998; Fairclough & Stratton, 2005).

In the Polar Scholar Program offered in Grundy Center, the use of technology in teaching physical education has involved instruction in the application of heart rate monitors, hand-held palm pilots, TriFit Assessment System, digital cameras, LCD projectors, audio systems, and wireless communication system. The use of heart rate monitors enables physical education instructors and students to understand what is happening inside of an individuals' body while they are engaged in a lesson and adjust their activity on an individual and self-directed basis. Hand-held palm pilots provide an opportunity for the physical education instructors to record, store and transmit data efficiently and effectively. The TriFit Assessment System provides empirical data regarding an individual's level of fitness. The use of digital cameras enabled the instructor to have a recorded picture for the entire lesson. This becomes relevant in linking assessment lessons to achievement and assessing time-on-task lesson design and response. The audiovisual projection systems enable students to visually review learning points such as heart rate graphs, rules of games, lessons and concepts. The use of the audio system provides an opportunity for the inclusion of music to enhance the learning environment and for transition from one activity to another. The wireless microphone provides opportunities for the instructor to be clearly heard.

It is interesting to note that few graduate students coming into the program have any knowledge in ways of which technology can be applied in the teaching of physical education. Our experience has shown us that most students are technologically illiterate and must be introduced to the technology and its application to the teaching of physical education. However, in their teaching assignments, POLAR Scholars have been very receptive to the use of technology. Today's children and youth are technologically very savvy and desirous of utilizing technology in their learning environments (Barker & Ansorge, 2007; Vandewater et al., 2007). Applications of technology in physical education have provided students with immediate and meaningful feedback regarding their progress, as well as enabling them to function at their own level in a self directed manner.

Reflection. The POLAR Scholars program draws out the close link between one's real life professional experiences and learning, enabling POLAR Scholars to place into practice the central idea of praxis - action, followed by reflection to inform and then influence ones next actions. In this sense, reflection can be thought of

as the ability to think about, analyze, and then transform ones' future actions to enable one to engage in more effective teaching strategies. As Korthagen (2001) has written, ". . . reflection is the mental process of trying structure or restructure and experience, problem or existing knowledge or insights" (p. 58). As Schön (1987) has suggested, it is a process leading to the restructuring or reframing of ones' actions. The idea is best advocated by Wang Yang-ming (1472-1529), a Chinese philosopher who described "Unity of knowing and doing." and Leonardo da Vinci (1452-1519), the *Greatest* Renaissance *Inventor* quoted "I have been impressed with the urgency of doing. Knowing is not enough; we must apply. Being willing is not enough; we must do." In reflection, Socrates (469 BC-399 BC) a Greek philosopher said "The unexamined life is not worth living." Also Confucius (551 BC-479 BC) a Chinese philosopher stated, "Study without reflection is a waste of time; reflection without study is dangerous." As Korthagen has stated supporting the work of Gore (1987) as well as Hatton and Smith (1995), ". . . during the last decades, reflection has become a basic concept in teacher education all over the world." (p. 51). As Clark (1986) and Schön (1983) have suggested, teacher education has involved a shift where teachers are perceived as reflective professionals who construct meaning. Reflection is, in fact, a special form of thought whose origins can be linked to the ideas of Dewey (1933). Korthagen concluded a broader view of reflection can be characterized by the concept of mirroring and the observation that different types of mirrors can be used: rational and holistic. The integration of different modes of reflection is most productive (p. 238).

There are many ways that reflection can be operationalized in support of the preparation of physical education teachers. Calderhead and Gates (1993, p. 2) offer several ways in which reflection assist physical education teachers:

- To enable . . . [physical education] . . . teachers to analyze, discuss, evaluate and change their own practice, adopting an analytical approach towards teaching;

- To foster . . . [physical education] . . . teachers' appreciation of the social and political contexts in which they work, helping . . . [physical education] . . . teachers to recognize that teaching is socially and politically situated and that the teacher's task involves an appreciation and analysis context;

- To enable . . . [physical education] . . . teachers to appraise to moral and ethical issues implicit in classroom practices, including the critical examination of their own beliefs about good teaching;

- To encourage . . . [physical education] . . . teachers to take greater responsibility for their own professional growth and to acquire some degree of professional autonomy;

- To facilitate teachers' development of their own theories of educational practice, understanding and developing a principled basis for their own classroom work; and

- To empower . . . [physical education] . . .teachers so that they may better influence future directions in education and take a more active role in educational decision making.

The POLAR Scholar program offers the opportunity to pause and make close links between one's philosophy, professional and life experience, wisdom and application. The approach is one of promoting an in-depth, thoughtful form of thinking coupled with the use of ones' intuition, imagination and creativity. Polar Scholars are asked to review, reflect, refresh and find new solutions through the process of reflection to improve their professional practices. A focus on the methodology of applying the five (5) 'C's: communication, consultation, connection, cooperation and contribution is emphasized. A safe and trusting environment is offered, in which POLAR Scholars are encouraged to ask many questions in relation to their lives and to reflect on their own characters, strengths and weaknesses. They are given the opportunity to express their concerns and problems, to visualize their own actions and to put into practice what they believe. This enables POLAR–Scholars to incorporate their beliefs, characters and aspirations in their teaching and learning in a holistic way. The design of the program provides POLAR Scholars with an opportunity to make a more direct and immediate connection between practice and theory. They became more aware of themselves and others. They are more effectively able to feel, see, transform, and act to remake and find their better selves. Another important aspect of the Polar Scholars program is to provide positive and successful experiences continually for Polar Scholars throughout the year and they are inspired to turn obstacles into opportunities. It is evident

that Polar Scholars practice what they preach. They have set an excellent example themselves through their action, reflection and action. Polar Scholars believe through their active reflection and effort, they can make a difference in teacher preparation.

The Master Physical Education Teacher. The utilization of a master teacher as a part of the learning process in the POLAR Scholar program provides students with an educational experience unlike other more traditional academic programs. Daloisio and Firestone (1983) have suggested that "learning usually occurs in association with various helpers, such as teachers, tutors, masters and peers" (p. 73). The literature has suggested that pre-service teachers identify field experiences and hands-on learning as integral within their preparation programs. Yet, Behets and Vergauwen (2006) describe a conflict between practice and theory in traditional teacher education programs. Often the divorce of theory promoted in academic settings from practical teaching experience is a legitimate concern facing many new physical education teachers.

As the POLAR Scholar program emphasizes the connection/marriage of practice and theory within a teaching and learning environment, an important element is the mentorship provided by a master teacher. Coleman and Mitchell (2000) note that teaching behaviors of pre-service teachers often reflect those of the master teacher more closely than methods learned elsewhere. This interaction between the POLAR Scholars and the master teacher is vital in the progressive development of teachers and serves to enhance the quality of learning and experience of young teachers serving to provide critical guidance, reflective practices, and constant observation. The POLAR Scholar program situates students alongside a supportive and experienced Master Teacher to guide and enhance the learners' understanding of theory in practice, the pursuit of best practice, and ultimately more dedicated and prepared teachers.

The role of the master teacher is one of serving as a mentor to the POLAR Scholars with the primary function of modeling best professional practices. The master teacher is the POLAR Scholars most important contact working to interact on a daily basis providing guidance, instruction, and counsel. The relationship between the POLAR Scholars and the master teacher may be characterized as one which reflects a deep commitment and dedication to a shared learning process based on respect, trust and a strong desire to improve and enhance professional practice in the context of a meaningful learning environment. More specifically, the master teacher working directly in an on-going fashion also works to encourage the best efforts of the POLAR Scholars by acting as an advocate, cheerleader, encourager, coach, promoter of values, facilitator, and symbol of integrity as well as serving as a teacher/instructor. In addition, the master teacher works to assist the POLAR Scholar by linking them to other school, community and professional resources and networks.

Of course, an important function played by the master teacher is to provide critique and useful insight to the POLAR Scholar so that they may be able to improve their teaching effectiveness by reworking teaching strategies, build warmer more caring relationships with children and youth, strengthen classroom content and or enhance their relationships with their colleagues, parents, administrators and or other stakeholders especially community members to take physical education outside the gymnasium walls. Table 1 presents the reflections of POLAR Scholars regarding their impressions of the ways in which the master teacher contributes to their development and learning.

Table 1. POLAR Scholars Perceptions of the Role & Function of the Master Physical Education Teacher.

POLAR Scholar Perceptions – Master physical education teacher must . . .
• have a strong belief in his/her program and calling (teaching) and be a strong advocate of and for physical education and healthy active living
• be willing to sacrifice time before, after school and on weekends
• be dedicated to the personal and professional growth of the POLAR Scholars
• customize and/or individualize each POLAR Scholars' experience
• create a collaborative chemistry and build a collective confidence
• embrace the application of futuristic technology integrating it into the physical education classroom in a seamless fashion
• work to inspire, motivate, excite, energize and display his/her love and passion for teaching, students and life
• promote creativity and innovation
• seek ways to involve POLAR Scholars in curriculum development, implementation and evaluation
• promote strong parent/teacher relationships as well as ones with other community stakeholders
• as a mentor be open and willing to dialog, conversation and acting as a sounding board for POLAR Scholar concerns inside and outside the classroom
• lead by example by being dependable, always following through as a person of integrity
• assist POLAR Scholars in establishing a network of professional contacts
• reflect authenticity, sincerity, generosity and forthrightness in assisting POLAR Scholars in addressing their personal and professional shortcomings, offering constructive criticism
• provide a roadmap of professional success for the POLAR Scholars
• build a lifelong professional relationship with each POLAR Scholar that doesn't end with the program, it continues to flourish as we become colleagues and is called upon to be a trusted confidants
• be able to multi task, responding to not only his/her own students, administrators, parents and other community stakeholders, but also other important partners such as the university
• be a person willing to give to others – a person of service with a caring heart to give so much to the program, school, community, which in turn makes it an exceptional distinctive personal and professional journey.

To serve as a master teacher requires a special commitment of a capable and competent individual-one who has confidence in their own professional abilities yet is also desirous of engaging others in a reciprocal learning endeavor. First, to be effective in the role of master teacher, one must be willing to share with others a lifetime of professional knowledge and insight. Further, it requires a great deal of additional time and energy on the part of the master teacher. Time with the POLAR Scholar is shared not only in the classroom but perhaps more importantly outside the work environment as the quest for learning and knowledge and skill acquisition is expansive in the program. Further, one must be willing to give of oneself often exposing one's own frailty and most inter thoughts, misgivings and at times frustrations with one's own teaching career. As Palmer (2007) has offered,

I am a teacher at heart, and there are moments in the classroom when I can hardly hold the joy. When my students and I discover uncharted territory to explore, when the pathway out of a thicket opens up before us, when our experience is illumined by the lightning-life of the mind--then teaching is the finest work I know. But at other moments, the classroom is so lifeless or painful or confused--and I am so powerless to do anything about it--that my claim to be a teacher seems a transparent sham. (p.1)

The master teacher is often an individual who has been in the arena for years with successful professional experience. And, as Theodore Roosevelt (1910) reminds us, ". . . the credit belongs to the man who is actually in the arena, whose face is marred by dust and sweat and blood." However, in this unique program, he/she is not alone as the POLAR Scholar program is a shared effort involving students, the master teacher, administrators, community members and university academics.

Community Partnerships. To meet the challenge of the global educational reform, it is becoming clear that educators need to know more about how to communicate effectively, share idea, solve problems, and work together as members of teams with other educators, parents, and community members (Pounder, Reitzug, & Young, 2002; Sanders, Jones, & Abel, 2002). In many school districts across the United States, school administrators have joined community organizations such as universities to establish partnership to create more positive impact on student learning and utilize new resources which will move their schools forward (Gutierrez, Field, Simmons, & Baslie, 2007). Key education reform groups, such as the National Council for Accreditation of Teacher Education (NCATE, 2002) and the Interstate New Teacher Assessment and Support Consortium (INTASC) are encouraging coursework on partnership. These groups have identified comprehensive and practical knowledge of school, family, and community partnerships as essential for teacher professional preparation. However, The lack of attention in higher education to educators' skills in conducting family and community involvement activities is not encouraging (Epstein & Sanders, 2008) even though the major directives for school improvement, comprehensive school reform, and district leadership emphasize on this component of school organization (Herman et al., 1999; U.S. Department of Education, 2002). Flanigan (2007) reported on a survey study of Focus groups of College of Education (COE) faculty (N= 134) from 5 Illinois Professional Learner's Partnership universities on their opinions related to partnerships of schools, parents, and communities. The findings suggested that community includes not only the community of the school, but also the parents and community outside the school; and helping pre-service teachers understand and utilize the networking system the school and outside the school with parents and community is important.

Studies on the university-community partnerships in physical education, health and wellness are scarce in reported literature. One of the examples is The Youth Leader Partnership (YLP) project which consists of a group of six kinesiology and physical education faculty members from five different universities with the task to assist the special needs of underserved youths in the community (Martinek, Hellison, & Walsh, 2004). Another recent example university-community partnership entitled "The Career Club" - a physical-activity-based youth-development program, which was implemented through the collaboration auspices of the University of Illinois at Chicago and the Chicago Public Schools (Walsh, 2006).

For the physical education teacher preparation, Corbin and Mckenzie (2008) suggested that physical educators should promote physical activity both in and out of schools; collaborate with others to promote physical activity; use their collaborative skills to engage parents, other teachers, school administrators, and members of the community to become involved in physical activity

and health-promotion efforts. To link with the physical education and community co-operation, Mckenzie (2007) proposed physical educators " should more fully explore the numerous community settings where physical activity is promoted, such as community recreation centers, sports clubs, Boys and Girls Clubs, and commercial facilities" (p. 354).

POLAR Scholars are truly immersed into a community that embraces change and is dedicated to providing a foundation of support and encouragement for educators, specifically physical education, physical activity, health and wellness. Grundy Center is a small town that the POLAR Scholars are part of the community since they are living in which the school is located and get to know everyone there. This feeling of the complete immersion with the community can be seen from the comment of one POLAR Scholar: ". . . Grundy Center is one of the most caring, supportive and friendly communities in which to live, work and play." (University of Northern Iowa, 2006 p.3). The community welcomes POLAR Scholars when they first arrive and recognize and acknowledge their out-of-state license plates; in some respects, the POLAR Scholars are mini celebrity in this small rural community. They are viewed as role models for the community and, as such, high expectations for their behavior and work is expected. POLAR Scholars are often invited to the homes of family members and, as a result of this and other special relationships that are developed, become a vibrant part of community life.

The POLAR Scholars have certain responsibilities within the community. There is a unique partnership with the Polar Scholars Program and YMCA. They are involved by working in an internship YMCA program (2-3 hours per week) which is situated in the High School. They can choose to work with kids or adults and help run a YMCA program of their choice or one that is needed in the community. There are ample opportunities for the POLAR Scholars to meet and connect with community members at the YMCA throughout their time in Grundy Center.

Besides the YMCA internship experiences, the POLAR Scholars also are helping the sports team training such as coaching middle and high school cross country teams after school; conducting adult fitness class; serving as personal trainers; putting on Healthy Living Seminars in the community which entails hosting a seminar on a certain health related topic. The Healthy Living Seminars are great ways of communicating the benefits of physical education program with sports technology, physical activity, and healthy eating habits. It gives the POLAR Scholars the opportunity to present pertinent information to students and community members. Such events provide valuable practical experiences for the POLAR Scholars to promote active living concept in their future physical education program when they graduated. The relationship and bonding of the POLAR Scholars with the students and the community members are very close when they see them outside of their "job" and doing volunteer work at the sporting and health and wellness events, or helping the children's parents after school hours.

Cohort Groups. Cohort groups are used in many types of settings. Students in cohort groups move through a program together as a unit engaging in all course work together and sharing similar teaching experiences throughout the program during the same time frame. Baumgartner (2001) suggests that there are two general approaches that can be taken to promote learning in group situations. One is known as action learning which involves individuals working in team settings to solve problems and the other is known as collaborative inquiry and involves examination of an issue or concern in a group or a setting where cohorts have been established. Mandzuk et al. (2005) indicates that being a member of cohort groups encourages closure, stability, interdependence, and shared ideology which tend to facilitate social capital. Students in cohort groups form connections among individuals that positively affect the productivity of both the individuals and the group as a whole. Brooks (1998) states that the underlying philosophy of cohort groups is that learners are empowered and have a sense of ownership leading to a greater feeling of inclusiveness, promotion of collaboration, and enhanced academic performance. Barnett and Caffarella (1992) identify four common components in cohort groups that help account for their success: "1) the initial development activities help form bonds between group members; 2) the reflective seminars help integrate theory and practice; 3) learners develop individual learning plans/contracts assisting the learner in maintaining their personal goals; and 4) post cohort involvement usually becomes a long term contract" (pp. 1-2).

Branyon (2008) indicates that little research has been done with cohort groups with pre-service teachers. Students surveyed, however, identified closeness to classmates, a sharing of ideas, planning lessons together, teamwork, friendship, and peer coaching as positive elements of a cohort group. Also, the evidence suggests that using on-site mentors and cohort collaboration enhance teacher quality. Caruso's (2007) work states that the most effective strategies for new teachers to be successful was for them to observe master teachers, work with mentors, meet and make plans with other teachers, and receive feedback.

Instead of spending most of their time learning about being a teacher . . . students start the program at the front of the classroom from the very first day, with a teacher mentor by their side . . . young teachers go into the classroom, have experiences, and then come to a seminar where their coach can add theory to what they're learning first hand. It's exactly the opposite of the way it is done now. (Caruso, 2007, p. 2)

One of the uniqueness' of the POLAR Scholar program is that the group of graduate students is an intact cohort group, living and working in Grundy Center, Iowa. Students begin the program three weeks before school begins. Having a technology class and spending time learning about Iowa, the community, the school, each other and the PreK-12 students during this time provides them the opportunity to form bonds that carry through the year. Because of the unique dynamics created with the cohort group, the POLAR Scholars attend classes as an intact group; no other graduate students are in the classes with them.

Faculty teaching in the POLAR Scholar program has indicated that the cohort group is unique and achieves a much higher level of insight and understanding than the "typical" master's level student. The fact that they have developed "social capital" helps them achieve a high level of thoughtfulness through interactions and through shared experiences in the classroom as they teach in the PreK-12 program. The cohort group works as a team sharing ideas, planning together, and working with on-site mentors.

The POLAR Scholars work in a cohort group in a collaborative fashion exchanging new and innovative ideas freely and implementing them when applicable. The learning environment of this program allows POLAR Scholars to be in an "intact group" with passionate and progressive physical educators who are on a constant quest for best practice. This atmosphere of support provides a safe environment to think 'outside the box" on how quality physical education can and should be delivered. Working in constant collaboration for one school year allows for the fostering of the untapped potential in young professionals, promoting development and growth within a safe environment with constructive feedback, wisdom from a seasoned mentor, and the vision to advance change. These surroundings promote and support personal reflection of practice to theory versus theory to practice. Working in this program is like taking comprehensive exams every day. The knowledge and skills gained by the POLAR Scholars within this environment encourage a foundation of advanced pedagogy and quality curriculum and programming upon completion unlike any other graduate teaching program.

Lessons Learned and Concluding Comments

Rojek (2005, p. 11) has written that public education has adjusted slowly and unevenly to the new skills and consumption opportunities presented by the global, information economy. How does an academic program bring about change? Colleges and universities and their faculties are, by and large, conservative institutions not prone to responding to changes in society. What we do today in preparing physical education teachers may not be relevant now or in the future. Encouraging faculty to move in a different direction designing a curriculum that is, in fact, contemporary, innovative and relevant is difficult. By establishing a parallel program aligned with the university, we have been able to overcome many of the barriers and reluctance to change that faculty have when protecting outmoded ideas and teaching strategies.

The focus of the master's degree program in teaching physical education with an emphasis on technology has been to create an enthusiastic cadre of individuals dedicated to new strategies and way of interacting with and teaching children and youth. Our goal was not to provide graduate students with knowledge and skills as much as it was to transform their attitudes,

values and behaviors with what we believed was a more progressive way of education. Most educators focus on transmitting information and skills. Our focus was one of transforming the lives of the POLAR Scholars. We sought to change the way that students who participate in the master's degree program think and practice. Our goal was to change the way they practice teaching physical education and its relationship to learning. We sought to have the POLAR Scholars reflect a deeper commitment and dedication to teaching and learning. We ask the POLAR Scholars to transform themselves through self reflection and self awareness and we challenge them to change the world, one child at a time.

As learning is a social and human endeavor, it was important for us to change the way that POLAR Scholars viewed other human beings in the context of their fitness and well being. By utilizing technology, we have been able to promote the opportunity for individuals to engage in self directed learning consistent with their abilities. The use of technology has provided us with objective evidence whereby the physical education teacher and the student have been able to monitor the intensity of their effort. Without such measurable outcomes, there is a disconnection between the teacher, student, and what the student actually learns. This may lead to a diminishing and devaluing of an individuals' actual effort. In turn, this may affect their attitude toward physical activity and future engagement on a life long basis. As one POLAR Scholar noted, paraphrasing the inspiring religious song Amazing Grace, "I see, now I believe."

As the challenge of individuals being overweight and obese is a world wide problem, we also sought to promote more global themes. This was reflected in the attraction of faculty from Portugal, Hong Kong, New Zealand and Taiwan as well as colleagues from other universities in the United States to join us in this endeavor. Further, many visitors have witnessed the program, adding suggestions to the ways in which we can incorporate best professional practices from their experience. Visitors from Australia, Brazil, The Peoples Republic of China, Finland, Hungary, Republic of Korea, Russia, Spain, United Kingdom, as well as colleagues from the Mayo Clinic's Department of Cardiology and many other universities have visited the program and offered their input. Further, as the Grundy Center Community Schools serve as a PE4Life Academy, numerous physical education training programs have been implemented, drawing school board members, administrators, medical staff, parents and teachers. As a result, these individuals have shared their perspective with POLAR Scholars, especially in gaining knowledge necessary to advocate for physical education in the schools.

This global perspective has provided a number of unique learning opportunities for the POLAR Scholars. It has enabled the program to have a broader frame work, drawing the expertise of others from multiple sources. What has emerged is a different style of teaching and learning, a blended one, reflecting multiple perspectives from around the world. The contextual based, full emersion nature of the program, coupled with partnerships, use of technology, oversight by a master teacher and use of cohort groups, yet blended with a global perspective, has created a unique way of enhancing the capabilities of physical education teachers.

The partnership themes developed have been critically important to the success of the program. Not only have we extended ourselves beyond the university environment, likewise the community school system and our corporate sponsor had to think outside the box. This partnership required the special commitment and energy of a dedicated group of individuals to make the program happen. We have learned to appreciate each other through the experience. University professors, administrators, community members, colleagues and young professionals have grown immeasurable from the experience.

A key to the endeavor has been the creative vision that has inspired cooperation among all of the stakeholders. Everyone involved in this endeavor believe very strongly in the need for change, the power of transformation and a commitment to finding best professional practices in the teaching of physical education. We have learned from each other and especially value the visionary leadership that leads to an honest pursuit to best professional practice. The journey has not always been an easy one, yet we believe that by linking practice to theory, emphasizing the use of technology and working together in partnership, we have forged a successful way of educating physical education teachers for the 21st Century.

References

Archinstein, B. (2002). Conflict amid community: The micropolitics of teacher collaboration. *Teacher College Record, 104*(4), 421-455.

Barker, B. S., & Ansorge, J. (2007). Robotics as means to increase achievement scores in an informal learning environment. *Journal of Research on Technology in Education, 39*(3), 229-243.

Barnett, B.G., & Caffarella, R.S. (1992, October). The use of cohorts: A powerful way for addressing issues of diversity in preparation for programs. Paper presented at the annual meeting of the University Council for Educational Administration, Minneapolis, MN. (ERIC Document Reproduction Service No. ED. 354 627)

Baumfield, V., & Butterworth, M. (2007). Creating and translating knowledge about teaching and learning in collaborative school-university research partnership: an analysis of what is exchanged across the partnership, by whom and how. *Teachers and Teaching: Theory and Practice, 13*(4), 411-437.

Baumgartner, L. M. (2001). An update on transformational learning. In S. B. Merriam (Ed.), *The new update on adult learning theory* (pp. 15-24). San Francisco, CA: Jossey-Bass.

Behets, D., & Vergauwen, L. (2006). Learning to Teach in the Field. In D. Kirk, D. Macdonald, & M. O'Sullivan (Eds.), *The Handbook of Physical Education* (pp. 407-424). London, Sage Publications.

Ben-Peretz, M. (1995). Curriculum of teacher education programs. In L. W. Anderson (Ed.), *International encyclopedia of teaching and teacher education* (pp. 543-547). Oxford: Elsevier-Science/Pergamon.

Branyon, J. (2008) Using Mentoring and cohort Collaboration: Enhancing Teacher Quality in Pre-Service Teachers. *The Delta Kappa Gamma Bulletin* 74 No. 3 Spring 2008

Brooks, P.A. (1998) Cohort Communities in Higher Education: The Best Example of Adult Education. Adult Education Research Conference. Retrieved from http://www.adulterc.org/applications/ClassifiedListingsManager/inc_classifiedlistingsmanager.asp?CategoryID=132 June 4, 2009

Calderhead, J., & Gates, P. (1993). *Conceptualizing reflection in teacher development*. London: Falmer Press.

Caruso, D. (2007) Rethinking How to Teach the New Teachers. *The New York Times*. November 4, 2007, Late Edition – Final

Chen, W., Rovegno, I., & Iran-Nejad, A. (2002). Application of a wholesome perspective to the movement approach for teching physcial education in elementary schools. *Education, 123* (2), 401-405.

Clandinin, D. J. (1995). Still learning to teach. In T. Rusell & F. Korthegen (Eds.), *Teachers who teach teachers* (pp. 25-31). London: Falmer Press.

Clark, C. M. (1986). Ten years of conceptual development in research on teacher thinking. In M. Ben-Peretz, R. Bromme, & R. Halkes (Eds.), *Advances of research on teacher thinking* (pp. 7-20). Lisse: Swets & Zeitlinger.

Coleman, M. M., & Mitchell, M. (2000). Assessing observation focus and conference targets of cooperating teachers. *Journal of Teaching in Physical Education, 20,* 40-54.

Cooper, J. E. (2007). Strengthening the case for community-based learning in teacher education. *Journal of Teacher Education, 58*(3), 245-255.

Corbin C. B., & Mckenzie, T. L. (2008). Physical activity promotion: A responsibility for both K-12 physical education and kinesiology. *Journal of Physical Education, Recreation and Dance, 79*(6), 47-50.

Corbin, C. B., & Pangrazi, R. P. (1998). *Physical activity for children: A statement of guidelines*. Reston, VA: National Association for Sport and Physical Education.

Daloisio, T., & Firestone, M. (1983). A case study in applying adult learning theory in developing managers. *Training and Development Journal, 37*(2), 73-78.

Deng, Z. (2004). The role of theory in teacher preparation: an analysis of the concept of theory application. *Asia-Pacific Journal of Teacher Education, 32*(2), 143-157.

Dewey, J. (1933). *How we think: A restatement of the relationship of reflective thinking to the educative process.* Boston: Heath.

Edginton, C. R. (2004). Leading physical education preparation in the 21st century: Teaching with technology. *Iowa Association of Health, Physical Education, Recreation and Dance Journal, 36*(2), 3-5.

Edginton, C. R. (2007). Has physical education failed? *The Asian Journal of Exercise & Sports Science, 3*(1), 1-7.

Edginton, C. R., Kirkpatrick, M., Schempp, P., & Jones, E. (2008). Teaching with technology: Leading physical education into the 21st Century. *International Journal of Physical Education, 45*(3), 138-144

Epstein, J. L., & Sanders, M. G. (2008). Prospects for change: Preparing educators for schools, family, and community partnerships. *Peabody Journal of Education, 81*(2), 81-120.

Fairclough, S., & Stratton, G. (2005). ' Physical education makes you fit and healthy'. Physical education's contribution to young people's physical activity levels. *Health Education Research, 20*(1), 14-23.

Finkenberg, M. E. (2008). Future choices, future trends in technology in kinesiology and physical education. *QUEST, 60*(4), 433-442.

Flanigan, C. B. (2007). Preparing preservice teachers to partner with parents and communities: An analysis of college of education faculty focus group. *The School Community Journal, 17*(2), 89-109.

Frazier, C. (1993). *A shared vision: Policy recommendations linking teacher education to school reform.* Denver: Education Commission of the States.

Freire, P. (1970). *Pedagogy of the oppressed.* New York: Continuum Publishing Co.

Gilliam, T. B., Freedson, P.S., Geenen, D.L., & Shahraray, B. (1981). Physical activity patterns determined by heart rate monitoring in 6-7 year-old children. *Medicine and Science in Sports and Exercise, 13,* 65-67.

Gore, J. M. (1987). Reflecting on reflective teaching. *Journal of Teacher Education, 38*(2), 33-39.

Gutierrez, C., Field, S., Simmons, J., & Basile, C. G. (2007). Principals as knowledge managers in partner schools. *School Leadership and Management, 27*(4), 333-346.

Hatton, N., & Smith, D. (1995). Reflection in teacher education: Towards definition and implementation. *Teaching and Teacher Education, 11*(1), 33-49.

Herman, R., Aladjem, D., McMahon, P., Masem, E., Mulligan, I.,Smith –O Malley, A., et al. (1999). *An educator's guide to school wide reform.* Washington DC: American Institutes for Research.

Hollister, A. (1987, February). A special report on fitness - The great American shape-up. *Life, 10*(2), 22-73.

Imig, D. G. and Switzer, T. J. (1996). Changing teacher education programs: Restructuring collegiate-based teacher education. In J. Sikula, T. J. Buttery, & E. Guyton (Eds), *Handbook of research on teacher education* (2nd ed., pp. 213-226). New York: Simon & Schuster Macmillan.

Janiu, S. (2002). Implementing handheld computing technology in physical education. *Journal of Physical Education, Recreation and Dance, 73*(3), 43-48.

Janz, K. F. (1994). Validation of the CSA accelerometer for assessing children's physical activity. *Medicine and Science in Sports and Exercise, 26,* 369-375.

Janz, K. F., Golden, J. C., Hansen, J. R., & Mahoney, L. T. (1992). Heart rate monitoring of physical activity in children and adolescents: The Muscatine Study. *Pediatrics, 89, 256*-261.

Jefferies, S. (2008) Preparing tomorrow's physical educators. *Physical Education News, 10*(8). Retrieved November 7, 2008, from http://www.pelinks4u.org

Kirkpatrick, B. (1987, August). Ultra physical education in the middle schools. *The Journal of Physical Education, Recreation, and Dance, 58*(6), 46-49.

Knowles, M. S. & Associates (1984). *Andragogy in action.* San Francisco: Jossey-Bass.

Korthagen, F. A. (2001). *Linking practice and theory: The pedagogy of realistic teacher education*. London: Lawrence Erlbaum Associates.

Korthagen, F. A., & Kessels, J. (1999, May). Linking theory and practice: Changing the pedagogy of teacher education. *Educational Research, 28* (4), 4-17.

Lortie, S. (1975). *Schoolteacher: A sociological study*. Chicago: University of Chicago Press.

Loughran, L. J. (2002). Effective reflective practice: In search of meaning in learning about teaching. *Journal of Teacher Education, 53,* 33-43.

Mandzuk, D., Hansinoff, S. & Seifert, K.. (2005) Inside a Student Cohort: Teacher Education from a Social Capital Perspective. *Canadian Journal of Education,* January 2005, 168-184

Martinek, T., Hellison, D., & Walsh, D. (2004). Service-bonded inquiry revisited: A research model for the community-engaged professor. *Quest, 56,* 397-412.

McKenzie, T. L. (2007). The preparation of physical educators: A public health perspective. *Quest, 59,* 346-357.

Mezirow, J. (1997). Transformative learning: Theory to practice. *New Directions for Adult and Continuing Education, 74,* 5-12.

Morgan, C. F., Pangrazi, R. P., & Beighie, A. (2003). Using pedometers to promote physical activity in physical education. *Journal of Physical Education, Recreation and Dance, 74* (7), 33-38.

National Council for Accreditation of Teacher Education (2002). *Professional standards for the accreditation of schools, colleges, and departments of education*. Washington, DC: Author.

Nygaard, C., Hojlt, T., & Hermansen, M. (2008). Learning-based curriculum development. *Higher Education, 55*(1), 33-50.

Palmer, P. (2007). *The courage to teach: Exploring the inner landscape of a teacher's life*. San Francisco: Jossey-Bass.

Pounder, D., Reitzug, U., & Young, M. D. (2002). Preparing school leaders for school improvement, social justice and community. In J. Murphy (Ed.), *The educational leadership challenge: Redefining leadership for the 21st century* (pp. 261-288). Chicago: University of Chicago Press.

Rojek, C. (2005). *Leisure theory: Principles and practices*. New York: Palgrave Macmillan.

Roosevelt, T. (1910, April). Man in the arena. A presentation given at the University of Paris, Sorbonne. Paris, France.

Sallis, J. F., Buono, M. J., Roby, J. J., Carlson, D., & Nelson, J. A. (1990). The Caltrac accelerometer as a physical activity monitor for school-age children. *Medicine and Science in Sports and Exercise, 22,* 698-703.

Sallis, J. F., Strikmillller, P. K., Harsha, D. W., Feldman H. A., Ehlinger, S., Stone, E. J., et al. (1996). Validation of interviewer-and self-administered physical activity checklists for fifth-grade students. *Medicine and Science in Sports and Exercise, 28,* 840-849.

Sanders, M. G., Jones, G. A., & Abel, Y. (2002). Involving families and communities in the education of children and youth placed at-risk. In S. Stringfield & D. Land (Eds.), Educating at-risk students: *101 yearbook for the National Society of the Study of Education, Part 2* (pp. 171-188). Chicago: University of Chicago Press.

Scharmann, L. C. (2007). A dynamic professional development school partnership in science education. *Journal of Education Research. 100*(4), 235-242.

Schön, D. A. (1983). *The reflective practitioner, how professionals think in action*. New York: Basic Books.

Schön, D. A. (1987). *Educating the reflective practitioner.* San Francisco, Jossey Bass.

Sprinthall, N. A., Reiman, A. J., & Thies-Sprinthall, L. (1996). Teacher professional development. In J. Sikula (Ed.), *Handbook of research on teacher education* (2nd ed., pp. 666-703). New York: Macmillan.

The Renaissance Group. (1993). *Teachers for a new world*. Cedar Falls, IA: Author.

Tinning, R. (2004). Rethinking the preparation of HPE teachers: Rumination on knowledge, identity, and ways of thinking. *Asia-Pacific Journal of Teacher Education, 32*(3), 241-253.

Trost, S. G. (2007). State of the art reviews: Measurement of physical activity in children and adolescents. *American Journal of Lifestyle Medicine, 1*(4), 299-314.

University of Northern Iowa (2006). *Master of Arts physical education – Teaching with technology: Leading physical education preparation into the 21st century.* [Brochure]. Cedar Falls, Iowa: Author.

U.S. Department of Education (2002). Overview of the Comprehensive School Reform program (CSR), Retrieved February 28, 2006, from http://www.ed.gov/programs/compreform/2pager.html

Vandewater, E. A., Rideout, V. J., Wartella, E. A., Huang, X, Lee, J. H., & Shim, M. S. (2007) Digital childhood: Electronic media and technology use among infants, toddlers, and preschoolers. *Pediatrics, 119*(5), 1006-1015.

Vermunt, J. D. (2005). Relations between student learning patterns and personal and contextual factors and academic performance. *Higher Education, 49*(3), 205-234.

Vick, M. (2006). "It's a Difficulty Matter": Historical perspectives on the enduring problem of the practicum in teacher preparation. *Asia-Pacific Journal of Teacher Education, 34*(2), 181-198.

Vickers, M., Harris, C., & McCarthy, F. (2004). University-community engagement: exploring service-learning options within practicum. *Asia-Pacific Journal of Teacher Education, 32*(2), 129-141.

Walsh, D. (2006). Best practice in university-community partnership: Lesson learned from a physical-activity-based program. *Journal of Physical Education, Recreation and Dance, 77*(4), 45-49.

Welk, G. J., & Corbin, C. B. (1995). The validity of the Tritrac-R3D activity monitor for the assessment of physical activity in children. *Research Quarterly for Exercise and Sport, 66,* 202-209.

Ziebarth, J., & Bovill, R. (2008). A partnership in progress. *Education, 128*(3), 441-459.

Zeichner, K. M., & Gore, J. M. (1990). Teacher socialization. In W. R. Houston (Ed.), *Handbook of research on teacher education* (pp. 329-348). New York: Macmillan.

Zeichner, K. M., & Tabachnick, B. R. (1981). Are the effects of university teacher education washed out by school experiences? *Journal of Teacher Education, 32,* 7-11.

Correspondence:

Name: Christopher R. Edginton,
Ph.D., Professor & Director,
Address: School of Health,
Physical Education and Leisure Services,
University of Northern Iowa,
203 Wellness/ Recreation Center,
Cedar Falls, Iowa 50614-0241, USA.
Phone: (319) 273-2840
Email: christopher.edginton@uni.edu