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Improving Teaching through Continuous Learning: The Inquiry Process John Wooden Used to Become Coach of the Century

BRADLEY ALAN ERMELING
University of California, Los Angeles, California

Past and contemporary scholars have emphasized the importance of job-embedded, systematic instructional inquiry for educators. A recent review of the literature highlights four key features shared by several well documented inquiry approaches for classroom teachers. Interestingly, another line of research suggests that these key features also characterized the process that UCLA’s John Wooden used to systematically improve his teaching of basketball over a period of three decades. As educators and researchers work to build the case for inquiry-based models in classrooms, sports, and physical education, John Wooden’s example provides a unifying and compelling illustration of the potential of the inquiry-based approach for any pedagogical context. It also provides an enduring image of the commitment required over time to achieve results.

Keywords Teaching, coaching, sport, physical education

The origins of professional development through inquiry stretch back at least as far as Dewey (1933) who viewed inquiry as a process of progressive problem solving and believed that nurturing reflective dispositions was an essential ingredient for improving pedagogy over time (Rodgers, 2002). Over the last 20 years, interest in practice-based communities of professional inquiry has accelerated just as criticism of conventional professional development programs has increased. Like Dewey, contemporary authors and researchers are drawing attention to context-embedded systems for reflective learning and systematic, intentional inquiry by educators (Schön, 1987; Cochran-Smith & Lytle, 1993). This line of research and inquiry is prevalent not only for classroom teachers but also for coaches and physical education instructors (Gilbert, Gallimore, and Trudel, 2009; National Association for Sport and Physical Education, 2008; Penney, 2006).

There are at least three thoroughly documented models of professional inquiry focused on improving classroom instruction—Japanese lesson study (Lewis, 2002; Stigler & Hiebert, 1999), action research (Carr & Kemmis, 1986; Mertler, 2009), and the Getting Results model (Saunders, Goldenberg, & Gallimore, 2009). A recent review of the classroom education literature revealed four key features that were shared by all three of these inquiry-based approaches (Ermeling, 2010): Identifying and defining important and recursive instructional problems specific to the local context; preparing and implementing detailed instructional plans; utilizing evidence to drive reflection, analysis, next steps; and persistently working toward detectable improvements, specific cause-effect findings about...
teaching and learning. Table 1 provides a brief description of the three prominent inquiry-based models from the research literature as well as the four key features shared by these models.

Interestingly, another line of research suggests that these same four features also characterized the process that UCLA’s John Wooden used in his teaching on the basketball court (Tharp & Gallimore, 1976, 2004; Nater & Gallimore, 2010). John Wooden was the legendary basketball coach at UCLA from 1948–1975. During that period Coach Wooden distinguished himself with a record ten NCAA national championships, including seven in a row, and was named national coach of the year six times. Throughout his extraordinary career, Coach Wooden insisted that much of what he did to teach basketball he had learned as a high school English teacher in the 1930s. He also insisted that he had never stopped trying to improve his teaching. In each year of his 29 seasons, from the first season in 1946–47 until his last season in 1974–75, Coach followed a systematic approach to his own continuous improvement efforts.

The intent of this paper is to use the example of John Wooden, who many consider to be the greatest teacher ever to work in a sport context, as a point of comparison for explaining these four key features of effective teacher inquiry. In the paragraphs below, I elaborate on each of the four features as represented in some of the research literature on classroom teaching (Ermeling, 2010), followed by the parallel description of how John Wooden incorporated that feature in his own inquiry-based routines and processes. While it is beyond the scope and intent of this paper to provide a comprehensive review of teacher inquiry across various settings, my hope is that these comparisons might draw attention to the parallel tracks of research and inquiry into effective pedagogy that exist among diverse contexts and to explore and possibly inspire increased dialogue across teaching-centered professions in sports, physical education, and classroom instruction.

Feature #1: Identifying and Defining Important and Recursive Instructional Problems Specific to the Local Context

Despite the long history of publications and teaching on professional inquiry by Dewey, Schön, and other scholars (Nolan & Huber, 1989; Rodgers, 2002; Tom, 1985), conventional professional development programs in education have almost exclusively relied on episodic seminars and workshops which broadly sample a wide range of items but fail to engage teachers in the deliberate study of specific problems. Even recently popularized, site-based learning communities typically focus on broadly defining standards, assessments, and interventions but rarely take the next step by drilling down to specific topics for deeper investigation and reflective analysis.

Standing in contrast to these pervasive methods, research on inquiry-based models points to the importance of identifying and persistently addressing individual instructional problems (Ermeling, 2010). These problems represent compelling and recursive areas of need that teachers find challenging to teach and difficult for students to learn, such as reading comprehension, using data to write conclusions, understanding the relationship between structure and function in living organisms, or understanding equivalence (Gallimore, Ermeling, Saunders, & Goldenberg, 2009). As Dewey describes it, the learning process begins with a state of perplexity and doubt instigated by the identification of these very specific and relevant problems. This state of disequilibrium “unleashes an inquiry process in which the quest first for definition, then for resolution becomes a compelling necessity” (Demetrion, 2006, p. 12).
In recent years, Japanese lesson study has been popularized by researchers who point to this approach as one of the potential reasons for Japanese students’ superior academic performance. During a typical lesson study cycle, teachers jointly select a long-term goal or investigative theme, gather research, study the curriculum, and design a single, detailed lesson plan on a given topic of interest. One of the group members presents this research lesson on behalf of the team, while the other teachers observe the lesson and collect data on student learning. An extensive discussion follows the observation, focusing on what the teachers observed and how the lesson might be revised. The team re-designs the instructional plan based on these reflections and chooses a member to re-teach the lesson. This time, the lesson is usually presented in an open house where additional faculty and guests are invited to observe the implementation and

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<td>Traditional research is typically conducted by researchers who are not personally engaged in the environment they are studying. By contrast, action research is defined as a process of systematic inquiry where practitioners work as classroom researchers to identify specific problems relevant to their local context and progress through cycles of action-oriented investigation. Teachers begin the process by identifying a compelling problem or topic of interest related to the instructional needs of their specific student population. Next they gather information and review related literature on the selected topic, bridging the gap between research and practice. Teachers then develop a data-collection strategy, and work through cycles of planning, implementation, and data collection to reflect on their practice, share results, and determine next steps. Actions are determined by evidence-based reflection and decision making as</td>
<td>Based on student achievement gains in a 6 year case study and 5 year quasi-experimental study, the Getting Results model highlights several important contextual elements for sustaining school improvement efforts, including goals that are set and shared, indicators for measuring success, leadership that supports and pressures, assistance from capable others, and settings for getting important work done. Supported by these contextual elements, teacher teams work through a highly refined inquiry-based protocol known as “Addressing Common Student Needs.” In this protocol, teacher teams identify a common area of student academic need, formulate an objective, and plan instruction to address the objective. Teachers then deliver the planned instruction in the classroom and regroup to analyze student work as well as the impact of their instruction on student outcomes. Based on this evidence, the teams reassess their overall progress toward the</td>
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Table 1
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<td>collect data on student learning. After a second formal debriefing and evaluation with this large group of observers, teachers prepare a report to document their efforts, synthesize findings, and consider new questions for subsequent lesson study cycles (Lewis, 2002; Stigler &amp; Hiebert, 1999). ↓</td>
<td>opposed to relying on less reliable sources such as tradition, authority, and common sense. Teachers record their findings and publish results within the school but also in formal publications, when appropriate, to further enhance the bridge between classroom practice and the scientific community (Mertler, 2009). ↓</td>
<td>objective and agrees on next steps. They repeat the process and stay with a particular area of need until they have documented specific results and findings. Teams then identify another common student need to launch a new inquiry project (Saunders, Goldenberg, &amp; Gallimore, 2009). ↓</td>
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Four Key Features of Professional Inquiry Focused on Improving Instruction (Ermeling, 2010).
Identifying and defining important and recursive instructional problems specific to the local context.
Preparing and implementing detailed instructional plans.
Utilizing evidence to drive reflection, analysis, next steps.
Persistently working toward detectable improvements, specific cause-effect findings about teaching and learning.

Wooden’s approach. As part of his regular discipline and self-initiated study of teaching, Coach Wooden worked through precisely this kind of focused study and research to continuously improve his practice. Before each new season, he identified a specific topic or area of team weakness to investigate. The goal was to uncover all he could learn about the particular topic and apply that to his teaching through testing, refinement, and elaboration.

There are many possible questions and topics to consider, but it’s important to choose the right one. When making my choice, I kept the following things in mind. Was it a team weakness last season? Will I need it next year? . . . Is it related to another subject previously studied or not yet studied? (Nater & Gallimore, 2010, p. 44).

Like any classroom context, Wooden and his coaching staff were responsible for a whole “curriculum” of important subject matter to cover over the course of the year (rebounding, passing, team defense, free-throw shooting). He worked diligently to teach well all of the fundamentals, but he chose one specific area at a time to slow down and focus his deeper professional growth and study.

Feature #2: Preparing and Implementing Detailed Instructional Plans

A common emphasis in contemporary education programs is to focus on the latest instructional strategies; identify them, talk about them, try them out, and then move on to the next
strategy. What is often missing in this methodology is a connection between the strategy and the problem it is addressing, but also the necessary thought and planning required for executing the strategy well in the classroom. In the context of a chosen inquiry topic or problem of study, taking time to map out specific details and commit them to writing is an essential part of both the empirical and instructional process. The details are where the complexities of teaching reside and where teachers confront the various instructional choices that will positively or negatively influence student outcomes. Strategies and approaches are only as good as their careful execution. And the execution is all in the preparation and the detail (Ermeling, 2010; Stigler & Hiebert, 1999).

Wooden’s approach. In all of his daily teaching, particularly for his selected topics of study, Coach Wooden was well-known for the detailed “lesson plans” he preserved for addressing the continuing struggles and needs of the team and each individual. He lived by the saying, “Failure to prepare is preparing to fail” (Nater & Gallimore, 2010, p. 67). Yearly, weekly, and daily planning were all part of his regular routine. He believed planning was essential for any instructional context and credited his high school teaching experience for his ability to plan basketball lessons: “I knew a detailed plan was necessary in teaching English, but it took a while before I understood the same thing was necessary in sports. Otherwise, you waste an enormous amount of time, effort, and talent” (p. 71).

Perhaps equally important to the planning was the commitment Coach made to keeping his planning time sacred. He dedicated a regular setting for this work and his players, friends, and coaches knew this time was not to be interrupted. Coach Wooden placed the highest value on time and using it well. He strived to make each day a masterpiece (Nater & Gallimore, 2010).

Feature #3: Utilizing Evidence to Drive Reflection, Analysis, Next Steps

In almost any contemporary organization the primary data that leaders focus on is the high stakes, summative results: the quarterly revenue forecast, the annual achievement gains, etc. While certainly important, the challenge with this narrow definition of data is that it leaves out the more immediate and formative types of assessment and evidence that professionals can use to drive their continuous improvement efforts and to evaluate the impact of their plans and actions.

Teachers participating in inquiry use a variety of forms of evidence and data to conduct their study of a problem and learn to rely on this evidence, both to better understand the problem, as well as to inform their decisions about what is working and what actions need to be tried next. Student work, student interviews, student questionnaires, checklists, self-assessments, portfolios, systematic classroom observations, test results, audio or video recordings from the classroom, are all potential sources of data that teachers might use to inform their investigations of a selected problem (Ermeling, 2010).

Wooden’s approach. Coach Wooden looked for data and evidence not only in the win/loss column but in the daily practice sessions where he implemented his detailed instructional plans. He kept a record of every practice in a loose-leaf notebook for future reference and prior to practice he had each plan typed on a 3 × 5 index card which he distributed to all the coaches and managers. Once the practice or lesson started he followed the plan as faithfully as possible and then used the back of these 3 × 5 cards to note observations, ideas, and improvements. After practice, he and his coaching staff would meet to review notes and observations and to make decisions regarding future planning and implementation efforts. Coach was hesitant to make ad hoc changes in midstream and believed it was best to execute plans, preserve notes, and plan effective instructional adjustments when
there was sufficient time to reflect on the evidence and draw conclusions. He used this evidence to inform his ongoing planning efforts and his understanding of each fundamental concept or skill that he was working to master (Nater & Gallimore, 2010).

**Feature #4: Persistently Working Toward Detectable Improvements, Specific Cause-Effect Findings about Teaching and Learning**

In teaching, coaching, or any profession, one of the under-emphasized features of continuous improvement is the goal-oriented persistence required over a period of time to understand/resolve a dilemma and discover specific cause-effect findings about teaching and learning. It is not a prescribed length of time or number of strategies attempted that allows a team or individual to solve a particular problem, but whether they persist long enough to arrive at some important findings—tangible and explicit cause-effect connections between instructional decisions and student outcomes. For many professionals this represents a shift toward a new emphasis on figuring out an instructional solution that produces a detectable improvement in learning, not just trying out a variety of interesting activities or strategies and then moving on to the next area of interest (Gallimore et al., 2009).

**Wooden’s approach.** Each season, Wooden continued to work at a specific problem or area of study until he had recorded a substantial body of knowledge for teaching it well. He studied books and articles, surveyed other coaches, tested and refined detailed practice plans, and, over a period of months, worked to gradually refine and synthesize a set of findings. He and his staff then sustained their work in this area while also targeting a new problem or topic to investigate. Table 2 summarizes Wooden’s systematic efforts to study and improve his teaching of free-throw shooting and illustrates the kind of specific knowledge and findings that were generated through his persistent cycles of inquiry (Nater & Gallimore, 2010). It also provides two classroom-based inquiry cases for comparison—one from a group of physical education teachers focused on teaching the principles of adaptation and progression, and one from a team of chemistry teachers that investigated methods for helping students better analyze data and write conclusions for lab reports.

**Discussion and Future Directions**

**Implications for Teacher and Coach Education**

At the heart of Wooden’s approach to inquiry and continuous improvement was a clear sense of purpose and perpetual desire to learn. Whether he was teaching free-throw shooting or life lessons about the meaning of success, he believed that his own growth and learning were in service of a greater cause—the learning of his students. According to Wooden, “The purpose of self-improvement is, of course, to help students improve. He [the coach] must continually be exploring for ways to improve himself in order that he may improve others and welcome every person and everything that can be helpful to him” (Nater & Gallimore, 2010, p. 43). Wooden practiced as well as preached internal attributions—embracing the causal relationship between teaching and student learning, between his actions and the corresponding results. Rather than assuming “I taught it but the students didn’t learn it,” he adopted a more productive mindset of—“We haven’t taught until they’ve learned.”

This kind of mindset, one of intellectual curiosity and a desire to continuously improve, is best supported by ongoing, context-specific opportunities for professional growth quite distinct from the training and certification approaches of conventional teacher and coach education programs. While most teachers and coaches informally work to
**Table 2**  
Inquiry Cases: Example from John Wooden Compared with Examples from Physical Education and High School Chemistry

<table>
<thead>
<tr>
<th>Example from Coach Wooden: Free-Throw Shooting Study</th>
<th>Example from Physical Education: Adaptation and Progression</th>
<th>Example from High School Chemistry: Analyzing Data to Write Conclusions</th>
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<td>In one of his typical cycles of systematic learning, Coach Wooden identified free-throw shooting as an area for investigation and improvement. His goal was to learn all he could about improving his team’s free-throw shooting percentage. Coach reviewed books and journal articles, analyzed statistics from other teams, surveyed other coaches, and established detailed notes and practice plans for teaching this fundamental skill. As he and his staff implemented these plans and analyzed notes from their ongoing observations and results, Coach gradually refined and synthesized his findings on how to teach free-throw shooting well. For teaching individuals, Coach had a clear set of shooting techniques that emerged (e.g., feet a little wider than the shoulders, balance,</td>
<td>A group of physical education teachers aspired to help students understand the principles of adaptation and progression. The existing curriculum introduced these principles as vocabulary terms but teachers observed that students did not have a sufficient working knowledge or deep understanding of the concepts. Drawing on expertise and resources from the professional running and fitness community, teachers adopted and refined a new approach to fitness testing designed to help students monitor and reflect on evidence of their own adaptation and progression with different fitness routines. As teachers implemented instructional plans and analyzed results across several instructional units, they observed students making significant progress both in their fitness performance and, more importantly, in their understanding of how the body responds to various exercises and which exercises had more specific</td>
<td>A team of high school chemistry teachers chose to address a common challenge they faced in helping students analyze data and write conclusions for lab reports. After reviewing writing assessments, the teachers felt that students either had never been appropriately taught or were not taking the time to write conclusions correctly, so they built a series of small activities to help students analyze data and write a synopsis of what the data were telling them. They gave small groups different data sets, allotted time for them to study the data, and had them write a brief synopsis of what the data were indicating. The students were then asked to join a larger team and combine the data sets from both groups, revise their initial synopsis as needed and present their data to the whole class.</td>
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right-handers shoot slightly to the left of center, left-handers shoot slightly to the right, shoulders should be squared to the backboard), but Coach also found that it was important to pay close attention to the result and not make dramatic changes to shooting style if the player was already a good shooter. From the team standpoint, Coach learned from this study that more time spent on free-throw shooting definitely increased results, but there was a point of diminishing returns if too much practice time was devoted to free-throw shooting as an isolated skill. He concluded that free-throw shooting should be integrated into the practice session (primarily toward the end) and should be as game-like as possible, placing game-like pressure on the players, and requiring them to shoot at various states of physical and mental fatigue (Nater & Gallimore, 2010).

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<td>influence on their fitness (e.g., when compared to other activities walk/jog training had the most dramatic effect on timed-mile results). Over time, the PE group arrived at a combination of several key instructional practices which became the departmental model for teaching adaptation and progression: (a) At the outset of the course, introduce the concept of a fitness test with the metaphor of a photograph—defining it as a snapshot of your personal fitness on a given day; (b) help students generate a list of criteria for sports that would be likely to improve overall fitness by reviewing examples and non-examples; (c) engage students in a carefully planned sequence of team sports and fitness units to foster an experience with adaptation and progression that is likely to yield useful data; (d) provide students with fitness test logs for monitoring their own progress; (e) model for students the process of analyzing and reflecting on fitness data; (f) assign a written essay question asking students to explain the principles of adaptation and progression with examples from their logs.</td>
<td>Through several cycles of planning, implementation, and analysis, the teachers found that having students stop and write a synopsis of the data helped students more carefully analyze and actually interpret the data. Putting into their own words the content and patterns that were evident in the data (even seemingly mundane things like one quantity being twice as large as another) helped them examine the data longer and go beyond their initial, sometimes superficial interpretations. In turn, this helped them develop and write more logical, more accurate, and more insightful conclusions for their lab reports. The synopsis became a way for the teachers to make more concrete and explicit a part of the scientific process that they had not really addressed before—that all important “pause” to closely examine and ponder and interpret the data itself.</td>
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improve teaching and learning on a daily basis, engaging in a systematic study of practice to investigate causal relationships between teaching and learning represents a dramatic shift in cultural routines for most educators. Studies across a variety of teaching environments demonstrate that establishing this culture and context for inquiry is no easy task and is even more difficult to sustain (Goldenberg, 2004; Culver, 2004; Culver & Trudel, 2006; Culver, Trudel, & Werthner, 2009). But research on teacher inquiry has also revealed several important findings with implications for how we might best structure teacher and coach education opportunities in the future.

Several research studies focused on American teachers participating in inquiry have revealed three critical lenses or mindsets that educators need to acquire for productive inquiry work: the researcher lens, the curriculum developer lens, and the student lens. The researcher lens represents an educator’s ability to formulate hypotheses, collect data, rely on evidence for decision-making, and generalize from findings. The curriculum developer lens represents an educator’s ability to sequence and connect students’ learning experiences. And the student lens represents an educator’s capacity to view instruction through the eyes of the students, anticipate their thinking and use this knowledge to build students’ understanding. Findings from this research also demonstrate that these lenses are unfamiliar to American teachers and must be deliberately cultivated for teachers to capitalize on the potential of systematic inquiry (Fernandez, Cannon, & Chokshi, 2003; Sandoval, Deneroff, & Franke, 2002). Gilbert and Trudel (2001) recorded similar findings in their study of coaches as reflective practitioners, and other coaching and physical education studies point to developing awareness of athletes as learners and learning to focus on athletes’ outcomes as critical aspects of coach inquiry and effectiveness (Cassidy, Potrac, & McKenzie, 2006; Côté & Gilbert, 2009). Teacher and coach education programs would do well to create opportunities and learning experiences that foster the development of these life-long inquiry skills and capacities. For some helpful examples, see Knowles, Gilbourne, Borrie, and Nevill (2001); Knowles, Tyler, Gilbourne, and Eubank (2006); and Nelson and Cushion (2006).

Another body of research has identified several key conditions necessary for sustaining practice-based collaborative inquiry teams, including the importance of stable settings, trained facilitators, and tested protocols (Gallimore et al., 2009). Stable settings, like Coach Wooden’s sacred planning time, are dedicated and protected times where educators meet on a regular basis to get important work done. Saunders and Goldenberg (2005) write about the significant contribution of settings to school improvement and school change efforts and emphasize the importance of establishing settings not only for teachers but also for groups of leaders responsible for facilitating the inquiry process. Identifying and training these facilitators is an equally critical element. In rare cases, coaching teams or teacher workgroups inherit an extraordinary leader, possessing the natural instincts and skills to construct processes and guide colleagues through a systematic study of practice. Typically, however, groups of educators need a designated point person who receives explicit training and support for facilitating the inquiry process and developing the critical lenses of inquiry. This training is most productive when it is based on tested protocols that focus on the four essential features of inquiry, assisting educators to jointly identify problems, prepare and implement instructional plans, utilize evidence for reflection, and persistently work toward detectable improvements. Schools and athletic organizations that are serious about promoting inquiry and continuous improvement should strategically incorporate stable settings, trained facilitators, and tested protocols into their strategic plans so that educators have the support and resources needed to sustain meaningful professional growth (Armour & Yelling, 2007; Cassidy et al., 2006; Gallimore et al., 2009; Gilbert et al., 2009).
Topics for Future Research

While there are several school-based studies that have established empirical evidence connecting teacher inquiry to improvements in teaching and learning, these studies involve complex interventions with multiple variables and more research is needed to scientifically isolate the potential effects of teacher/coach inquiry on professional practice and student performance. Further research is also needed to compare and study which protocols might be most effective in fostering the kind of reflective practice represented by the four key features of inquiry. A number of other important questions also await future research and investigation. For example, it would be helpful to expand the descriptive knowledge base of teacher and coach inquiry across a variety of learning contexts (skill development, fitness development, obesity prevention) as well as different types of learning goals (knowledge, skill, or fitness as well as psychosocial outcomes, beliefs and behaviors). In recent years, students’ voice has become a critical source of evidence in education and physical education. It would be interesting to investigate how student and athlete voices might be best incorporated into the data collection process to inform professional inquiry projects. Another important research question relates to the role of new technologies. How might web-based social networks and asynchronous environments enhance or expand options for inquiry settings as well as sharing reports and findings? How might new tablet computers such as iPads be used as a contemporary version of Wooden’s 3 x 5 cards, increasing options for data collection and allowing educators to conveniently reference or revise instructional plans on the field and practice court or in the classroom? Finally, existing studies of professional inquiry range significantly in terms of the duration of inquiry cycles and the amount of time invested by participants. It will be important to study and understand the frequency and length of inquiry involvement by teachers and coaches that are mostly likely to yield positive results.

Conclusion

On the surface, the Wooden story can appear somewhat magical or even fortuitous but to associate Coach’s achievements with wizardry or even sheer talent would be missing the real legacy of this great teacher. In the end, one of his most impressive and enduring qualities was his passion for teaching and pursuit of continuous learning. In his 65th year, the summer before his final season and 10th national title, Coach picked a topic and became a learner just as he had done from the beginning. He sincerely believed that “when you are through learning, you are through” (Nater & Gallimore, 2010).

Conducting this kind of inquiry and analysis required persistence and significant time, but the product of his labors was a knowledge base of basketball teaching that has served as an inspiration to thousands of coaches, students, and athletes around the world. As educators and researchers work to build the case for inquiry-based models in classrooms, sports, and physical education, John Wooden’s example provides a unifying and compelling illustration of the potential of the inquiry-based approach for any pedagogical context. It also provides an enduring image of the commitment required over time to achieve results. As coach Wooden says, none of this happens overnight, but:

When you improve a little each day, eventually big things occur. . . . Not tomorrow, not the next day, but eventually a big gain is made. Don’t look for the big, quick improvement. Seek the small improvement one day at a time. That’s the only way it happens—and when it happens it lasts (Wooden & Jamison, 1997, p. 143).
References


