

Published in “*JTRM in Kinesiology*” an online peer-reviewed research and practice journal

October 10, 2014

Can Pre-Service Physical Education Majors Identify Learning Standards During Authentic Teaching Episodes?

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Abstract

Only a handful of research studies have been conducted to determine whether or not physical educators or pre-service physical education teachers are utilizing learning standards in their teaching. While pre-service teachers are typically required to align lesson objectives and content, their extent of their understanding of how learning standards are implemented in actual teaching is unknown. The purpose of this study was to determine if undergraduate physical education majors could identify instances and non-instances of physical education teachers incorporating learning standards in their lessons. Pre-service teachers viewed a series of secondary physical education teaching episodes captured on digital video recordings. The inter-agreement (IOA) scores for 101 physical education majors ranged from 65%-82% for the four New York State Learning Standards and from 51%-98% for the six National Association of Sport and Physical Education Standards. The researchers found that participants had the most difficulty identifying New York State Learning Standard 2 and National Association of Sport and Physical Education Learning Standard 5, with IOA scores of 65% and 51% respectively. Both of these standards involve personal and social responsibility and fall within the affective domain.

Key Words: *learning standards, physical education, physical education teacher education, pre-service teachers*

Introduction

State and national learning standards for physical education have received much attention in American education over the past two decades. Standards are broadly written statements about the end products of the educational experience and their development is thought to provide guidance to teachers about what should be taught in the subject area. The subsequent adoption of

Submitted July 11, 2014; accepted October 9, 2014.

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standards is presumed to be one step in holding teachers more accountable for student learning. Typically, standards are developed by professional associations in the discipline because the associations have the expertise within their membership to identify appropriate content in the subject area.

In 1986, the National Association for Sport and Physical Education (NASPE) sponsored the Outcomes Project, which gave definition to the term “physically- educated person” (NASPE, 1995) and identified twenty outcome statements to support this definition. The original seven NASPE content standards were culled from these 20 outcome statements and published in 2003. This document and the content standards were reviewed and revised resulting in six content learning standards (NASPE, 2004). The 2004 NASPE standards were used as the basis for this study and can be found in Figure 1. Furthermore, most states have created their own learning standards based on the national standards. Thus, a great deal of professional time and energy has been devoted to developing and revising learning standards in physical education. Despite these efforts, the roles of national and state learning standards in physical education teacher preparation programs and their impact on pre-service teachers have not yet been delineated.

The 2012 NASPE *Shape of the Nation Report: Status of Physical Education in the USA* verified the fact that state and national learning standards for physical education are available to almost all physical educators across the United States. Data indicate that 49 states and the District of Columbia have developed their own state learning standards for physical education, and all of these states report that their state standards for physical education comply, in the majority of cases, with the six national learning standards (NASPE, 2012). The New York State (NYS) Learning Standards (1996) used in this study can be found in Figure 2. Iowa is the only state that does not have learning standards for physical education. The number of states (98%) that report having learning standards for physical education is impressive. However, the degree to which physical educators know about and are incorporating learning standards in their teaching remains largely unknown (Lambert, 2003).

Several states have reported how they developed greater accountability for physical education by utilizing state standards aligned with the NASPE standards. A number of researchers and educators have described the various steps taken in each state to implement reform through the introduction of state and national learning standards (Deal, Jenkins, Byra & Gates, 2002; Fay & Doolittle, 2002; Peterson, Cruz, & Amundson, 2004; Rink, Templeton, Hewitt, Dawkins, Mitchell, Barton, Taylor & Hohn, 2002). Others, such as Veal, Johnson, Campbell and Mckenthan (2002) have described how the NASPE Standards are aligned with the sport education model. They presented a strong case for teachers to use the sport education model by illustrating how it is particularly well suited to facilitate delivery of the national standards for a unit of instruction in physical education.

Practitioners and academics have also suggested ways that physical educators could teach toward the standards. Mohnsen (2001) suggested a four step process for the use of instructional media and software to help K-12 students meet the national standards in physical education. Gabbei and Hamrick (2001) proposed that physical educators include homework as a means of helping students meet the NASPE standards. Hodges-Kulinna and Krause (2001) recommended six general guidelines and a set of ten strategies teachers could use to specifically address NASPE Standard 4. This included the notion of reducing learning objectives in order to provide greater

depth of instruction and thus more time within the curriculum to meet Standard 4. Pangrazi (2003) indicated that a quality physical education program should be based upon the content standards. Specifically, the standards should be used for program development, instruction and evaluation. Lambert (2000) also acknowledged the role of teachers in organizing physical education content and assessments around the national standards. In the end, it is up to physical educators to choose and organize curriculum and learning experiences aligned with the content standards.

Only a handful of research studies have been conducted regarding the NASPE content standards. Chen (2006) conducted in-depth, formal interviews regarding teachers' knowledge and views of the national standards with 25 physical educators representing elementary, middle school and high school grade levels. Data analysis revealed four different levels of teachers' knowledge and understanding of the national standards. Each level was defined by a set of characteristics of commitment. These levels included "a deep understanding and strong commitment"; "familiarity and intention of integration"; "awareness and lack of internal drive force"; and "an awareness and little interest in learning" (p. 128). Chen (2006) discovered that a teacher's personal commitment to the standards serves an all-important function in utilizing the standards in his/her teaching. Furthermore, teachers with the highest level of commitment to the standards took advantage of professional development opportunities such as conferences and workshops.

Peterson, Cruz, James, Arem, Lieberman and Collier (2004) used a Likert scale questionnaire to survey 2000 New York state physical educators regarding their perceptions concerning state and national learning standards for physical education. They conducted extensive interviews with 20 teachers from urban, rural and suburban areas throughout the state. Their findings included: 1) standards prompted educators to use assessments more often and view assessment in a more serious light than in the past; 2) standards provided educators with a "common language" to use when discussing what was being taught; 3) standards helped teachers plan for the long term rather than just day to day; 4) standards prompted educators to improve instructional alignment; and finally, 5) teachers acknowledged that administrators play a key role in seeing that standards are acted upon.

Holly, Clark, Pennington and Aldana (2003) conducted a state-wide survey about the use of the national standards. The participants were 200 randomly selected physical educators in Utah. Seventy-six percent of the respondents indicated they used skill tests to assess skill competency for Standard 1, but only 22 % indicated that they regularly used standardized tests. Fifty-eight percent of the respondents indicated that they required their students to analyze game play and related strategies (Standard 2), however, only four percent did this on a consistent basis, and only eight percent of the teachers used written testing formats with their students to assess this standard. Eighty-nine percent of the respondents indicated that they required their students to follow rules (Standard 5), with 83% of the respondents assessing their students on rules of game play. When the respondents were asked about accountability for teaching toward the standards, only two percent of the teachers reported being held accountable for teaching to the national standards. Three percent indicated being held accountable for state standards and 12% were required to follow district standards (Holly et. al, 2003). According to Holly et al. (2003), 72% of physical educators had heard of national standards for physical education, but only 37% were aware of their purpose. Such findings raise concern for the degree to which state and national learning standards are being incorporated by physical educators in their teaching.

Learning to incorporate standards begins in physical education teacher education programs (PETE), where it is common practice to pre-service teachers to align lesson objectives and content with state and/or national standards. It is essential, then, for PETE faculty to be able to identify

pre-service teachers' potential knowledge gaps about the standards so they can be ameliorated. To date, there has not been a systematic investigation into pre-service teacher knowledge and application of standards in authentic teaching settings. In this study, the researchers sought to address this lack of data by examining how successful undergraduate physical education majors were in identifying NYS Physical Education Learning Standards, as well as NASPE Learning Standards, when incorporated in authentic teaching episodes.

Methods

Participants

The participants in this study were 120 physical education majors, with at least junior status, enrolled in one of five sections of a required teaching methods course. Each course section was taught by a different instructor. Instructors used the same textbook, learning packets and teaching labs. All instructors met to insure congruence of learning materials and experiences across the course sections. The participants were exposed to both national and state standards in at least two prerequisite courses. They were tested on their knowledge in these courses and were required to write lesson plans that were aligned with the standards. In addition, they addressed the standards during their practice teaching episodes in these courses. However, participants were not formally pre-tested on their knowledge of standards prior to the start of the study. IRB approval was obtained and all participants who volunteered for this study filled out informed consent forms. Only data for complete responses were used, making the final number of participants 101 for this study.

Learning Standards Observation Tool

In order to help pre-service teachers recognize the implementation of learning standards through teacher actions, the researchers developed an observation tool based on the constructs of NASPE (see Figure 1) and NYS learning standards (see Figure 2). The learning standards observation tool (LSOT) was developed in four phases. Phase One. A panel of three professors of physical education holding the rank of associate or full professor with the primary duty of teaching physical education pedagogy developed a list of five teacher actions/ behaviors for each standard, based on the following a priori criteria: 1) clear observable teacher action; 2) concisely defined – one sentence/statement; 3) directly related to the relevant standard; and, 4) an observable behavior that can be measured by a yes/no response. Phase Two. To establish content validity, the researchers distributed the statements to five pedagogical professionals with ranks ranging from assistant to full professor. Their task was to identify the three most robust examples of teacher behaviors/action for each standard. The selected examples were used to create a draft of the learning standards observational tool. Phase Three. The draft of the observation tool was then critiqued by three nationally known professors with expertise in physical education teacher education. Each professor was from a different institution. Phase Four. The researchers incorporated the experts' recommendations in the second draft of the tool and the instrument was reviewed again. Following the final critique, the observation tool included three statements that identified clear, observable teacher actions for each standard.

The format of the observation tool was organized in two parts on one sheet of paper (see Figures 1 and 2). The six NASPE learning standards are listed in the left margin on side one of the

tool. Three example teaching actions are listed to the right of each standard. The right margin of the tool provides a space to check a “yes” or “no” for each standard. The opposite side of the observation tool includes the three NYS learning standards, three example teaching actions for each standard and a corresponding yes/no space in the right margin for each standard. This tool is referred to as the LSOT or Learning Standards Observation Tool. See the LSOT in Figures 1 & 2.

Test Video Construction

Following IRB procedures and approval, two secondary physical education classes in two public schools were recorded via digital video in their entirety in color and with audio. Each class was taught by a different, veteran secondary physical educator. The first lesson featured girls’ basketball, and the second lesson featured coed project adventure. From these recordings, a test video was constructed featuring a series of eight teaching vignettes. Seven of the vignettes contained three to five instances where state and national learning standards were being taught. The following is a description of a vignette where the teacher is teaching to NYS and NASPE Standard 1: a class of seventh grade girls is seated on the floor observing the teacher demonstrate a right-handed lay-up at a medium running speed to the basket. The teacher instructs the girls to slowly run on a diagonal path to the right side of the basket without dribbling the ball and execute a step-hop while extending the shooting arm toward the backboard. The teacher emphasizes use of the “guide hand” and the cue “hand in the cookie jar” to help her students understand and practice a modified layup. In this video segment, the teacher’s emphasis is on executing the step-hop without adding the complexity of a running dribble. The teacher clearly provides a demonstration, explanation, and practice for a modified basketball layup.

One vignette featured a management episode and contained no instances of a state or national learning standard. In this vignette, a class of eighth-grade boys and girls, organized in groups of six students per group, is seated on mats listening to the teacher provide instructions. The teacher tells the students they will be participating in a fitness activity and instructs them to decide which two students in the group will be ball tossers, which two students will be bike riders, and which two students will be rope climbers. The segment ends with students talking among themselves. The teacher is clearly giving organizational directions. Two examples of each state and national learning standard were offered at least twice throughout the series of vignettes. Each vignette lasted no more than 45 seconds. The vignettes on the test video were arranged in a random order showing instances and non-instances of physical educators addressing state and national learning standards.

The five physical education faculty identified in Phase Two reviewed the test video using the Learning Standards Observation Tool (LSOT). These five raters watched the vignettes, one at a time, and marked their responses on the corresponding sections of the LSOT as to whether or not the vignettes addressed state and national learning standards. Responses were then collected and discussed to determine the score. If complete agreement was not achieved by the panel, the vignette was viewed again, and the process repeated. Only vignettes with complete agreement (100% among raters) were used in the test video to create the gold standard for scoring participant responses.

Data Collection

Testing directions were given, by the same individuals, to 120 pre-service teacher candidates enrolled in a physical education teacher education program. Participants were instructed to view a series of digital video-recorded teaching vignettes. The directions were given from a script that was read to maintain consistency across the groups. Each participant received a set of Learning Standards Observation Tools. Participants were oriented to the LSOT and how it would work with the test video. Participants were reminded that each vignette would be viewed for approximately 45 seconds without a repeat showing of any vignette. Any participant questions were answered. No talking was permitted during testing. Participants would observe one teaching vignette on the test video and then use the learning standards observation tool to mark a yes or no for the presence of a NYS learning standard. Participants would then turn the observation tool over and mark a yes or no if a NASPE learning standard could be identified. The test administrators waited until all participants recorded their observations before moving to the next vignette. Following testing, the sets of observation tools were collected from each participant. Responses were then compared to the results derived from the consensus of five expert raters.

Data Analysis

To measure the consistency of the ratings for the pre-service teachers with those of the expert panel (gold standard), inter-observer agreement (IOA) was calculated on Excel 2003. Percent agreement was suggested by Bishop (2008) for use when raters are working with dichotomous ratings, which was the case for the LSOT. IOA offers a meaningful interpretation of how closely the participants' observation matched the gold standard. Raters' responses were coded binomially: "0" = did not agree with expert ratings, and "1" agreed with expert ratings. Agreement was calculated by taking the sum for each observation. Inter-observer agreements for the ten standards for each vignette were calculated by taking the agreement and dividing it by N. The IOAs for the eight vignettes were averaged for each of the NASPE and NYS standards.

Results

The mean inter-observer agreement (IOA) scores for the four NYS Learning Standards ranged from just above 65% to 82% agreement between the participants and the expert panel. NYS Standard 1a "Perform Basic and Manipulative Skills" and 1b "Design Personal Fitness Programs" had very similar results at 72% and 73% agreement respectively. New York Standard 2 "A Safe and Healthy Environment and Personal and Social Responsibility" had the lowest IOA score of the NY standards at 65% agreement, while Standard 3 "Resource Management" had the highest IOA score of the NY standards at 82% agreement. The mean IOA scores for the six NASPE Learning Standards ranged from 51% to 98% agreement.

Overall, the NASPE Standards manifested a broader range of scores than the NYS Standards. The highest IOA score for the NASPE standards was 98% agreement for NASPE Standard 3 "Participates regularly in physical activity" followed by 80% agreement for NASPE Standard 1 "Demonstrates competency in motor skills and movement patterns needed to perform a variety of physical activities." The lowest IOA score for a NASPE standard was 51% agreement for standard 5 "Exhibits responsible personal and social behavior that respects self and others in physical activity." See Figure 1.

The mean IOA score of the four NYS learning standards was 69.5% and the mean IOA score for the six NASPE learning standards was 70.5%. Overall, IOA results for the identification of teacher actions aligned with the state and NASPE learning standards were similar. Furthermore, the data show that participants had trouble identifying NYS Learning Standard 2 and NASPE Learning Standard 5, with IOA scores of 65% and 51 % respectively. Both of these standards involve personal and social responsibility and fall within the affective domain.

Discussion

State and national learning standards are readily available to physical educators and should play a guiding role in the design of curriculum and teaching practice. However, the degree to which learning standards are being incorporated in physical education appears to be limited (Holly et al., 2003). Teacher behaviors are shaped in PETE programs, so it is important for PETE faculty to understand pre-service teachers' knowledge and ability to apply standards in lesson plans, curriculum and ultimately their teaching. Based on the data, there is clearly room for PETE programs to improve pre-service teachers' understanding and recognition of learning standards in action. Pre-service teachers' inability to recognize the application of standards during teaching episodes may signal a superficial understanding, which may account for subsequent lack of implementation as practitioners. Pre-service teachers may be better prepared if they have to articulate specific examples of what a learning standard means and give examples of a learning standard being actualized during teaching, similar to what is found in the LSOT. As indicated earlier, three robust teacher/actions were identified for each learning standard in the LSOT to help participants understand how a physical educator would actualize a learning standard during teaching. Development of additional examples may prove helpful in the preparation and training of pre-service teachers.

Perhaps the most interesting finding in this study is that pre-service teachers encountered the most difficulty identifying teacher actions related to state and national learning standards in the affective domain. This includes NYS Standard 2 that addresses "A safe and healthy environment and development of personal and social responsibility" and NASPE Standard 5 "Exhibits responsible personable and social behavior that respects self and others in physical activity settings." (see Figure 3). These data support previous studies that cite the affective domain as the most difficult to recognize and assess objectively (Curtner-Smith & Meek, 2000; Miller 2002; Patrick, Ward, & Crouch, 1998). Miller (2002) indicates that many educators develop affective objectives for their students, but do not feel comfortable measuring them. Furthermore, Curtner-Smith and Meek (2000) examined the value orientation preferences of secondary physical educators and their compatibility with a national curriculum and found that the social reconstruction value orientation, which embodies the affective domain, was the value orientation least preferred by secondary physical educators. The trouble pre-service teachers encountered in identifying teacher actions in the affective domain is a clear signal that PETE professionals need to spend more time helping pre-service teachers understand and apply affective learning standards in their teaching.

While participants struggled a bit with identifying some of the standards, they were fairly successful in terms of rate of agreement across the NYS Standard 3 Resource Management. This standard may have been easier for participants to identify in the vignettes as teachers verbally ask or told students they were teaching where they could use the skills they were learning within their community. Finally, it must be noted that in this study one out of four state standards and two out

of six NASPE standards reached 80% or higher inter-observer agreement, which is the criterion for reliability (Thomas & Nelson, 2001). The standards observation tool (LSOT) may need more development and testing to reach the 80% IOA level, but it is also possible that the participants need more in-depth training for using the tool or more simply, that their professional inexperience would limit their ability to recognize standards regardless of their training on the tool. The use of LSOT allowed researchers to identify the learning standards that pre-service teachers had the most trouble recognizing. This finding is important to PETE programs as they consider strategies for helping pre-service teachers address the learning standards, and particularly those in the affective domain. Finally, the findings of this study and the use of the observation tool suggest that more attention must be given to the way teachers support the learning standards as well as the ways teacher educators prepare pre-service teachers regarding state and national learning standards.

There were three limiting factors in this study. First, this study was limited to pre-service teachers in one institution. However, it should be noted that the participants in this study had different instructors for the methods course taken prior to conducting the study. In all, the 101 participants were spread across five different instructors at the same institution. Second, this study was limited to the use of video-recorded vignettes of experienced secondary physical educators teaching their normal classes rather than live teaching episodes. The digital video-recorded vignettes were used to control the content and teaching behaviors participants observed on the test tape while using the LSOT. Third, it is possible that teacher behaviors in the vignettes were not of sufficient clarity to elicit recognition by pre-service teachers, even though experts were able to make those identifications.

Recommendations

Physical education state and national learning standards were designed to help guide curriculum construction and teaching efforts and ultimately improve the quality of physical education that teachers offer their students. Such an endeavor merits serious research beyond surveys that ask physical educators if they are using state and national learning standards in their teaching and curriculum guides. Additional research needs to be conducted to find ways to help pre-service teachers move beyond an awareness or superficial understanding of state and national learning standards to a deep commitment to their use in practice, beginning with an examination of how pre-service teachers are being prepared to use learning standards in their teaching. Subsequent research could focus on various interventions designed to improve pre-service teacher recognition and application of standards. Based on Chen's (2006) finding that personal commitment to delivering standards is critical, interventions should include strategies for enhancing personal commitment. Perhaps the LSOT could be used as a training tool to help pre-service teachers identify standards in action. While this study contributes to our understanding of pre-service teachers' knowledge gaps regarding the standards, much remains to be learned about this important area.

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