

Teachers' Perceptions of Professional Learning to Increase Classroom Physical Activity: Supporting School Policy Implementation

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Abstract

The purpose of this study was to determine classroom teachers' and school administrators' ($N=146$) perceptions of physical activity (PA) integration into the academic classroom after participating in a day-long professional development (PD) workshop, and one year following the workshop. A retrospective pretest survey was administered to all participants at the close of the PD and one year later to measure participant perceptions across two levels: reaction to workshop quality and personal learning. Indicators of quality supported that the workshop was well planned, managed, and delivered. Results of paired-sample t-tests indicated a statistically significant improvement in participant understanding, ability to demonstrate comprehension, and apply concepts. Overall results of the one-year follow-up revealed that the levels of learning remained favorable and provided insight regarding the longer-term outcomes of teacher and student behaviors. The discussion addresses the importance of student-centered instruction, content specificity, professional collaboration, and school support in teacher professional development.

Keywords: professional development, classroom physical activity, policy

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During the 2014-2015 school year, one state's board of education, in the United States, initiated a policy modification requiring elementary and middle schools to provide 30 minutes of daily physical activity through access to recess and/or other opportunities that extend beyond formal course requirements in physical education and health. The impetus for this particular policy change was an emergence of scientific research supporting linkages between physical activity and health-related fitness in school-aged youth, and improvements in cognitive performance, academic performance, and mediating variables like concentration, self-esteem, and depression (Castelli, Hillman, Buck, & Erwin, 2007; Davis et al., 2007; Esteban-Cornejo, Tejero-Gonzalez, Sallis, & Veiga, 2014; Hollar et al., 2010; Ménard and Ellemberg, 2010; Norris, Shelton, Dunsmuir, Duke-Williams, & Stamatakis, 2015; Phillips, Hannon, & Castelli, 2015; Reed et al., 2010). Leading researchers and professional organizations have responded to these findings, and other health-related outcomes, by calling for increased access to physical activity opportunities before, during, and after the regular school day (American Alliance for Health, Physical Education, Recreation & Dance, 2013; Centers for Disease Control and Prevention, 2013; Cook & Kohl, 2013; Erwin, Beighle, Carson, & Castelli, 2013; Pate et al., 2006; Society of Health and Physical Educators, 2016).

Given the amount of time that children and adolescents are sedentary within the typical PreK-12 school setting, the integration of physical activity into the classroom has attracted considerable attention as an approach to facilitate the achievement of the recommended amount of 60-minutes or more of physical activity each day (Donnelly et al., 2009; Donnelly & Lambourne, 2011; DuBose et al., 2008; Pate et al., 2006). As with any environmental change in schools, modification of the traditional classroom to integrate higher levels of physical activity represents a considerable challenge. Teachers must take into account a multitude of factors when they plan, instruct, manage, and assess classroom lessons that integrate movement, such as goals

and objectives, content, availability of instructional resources, physical space and equipment, developmental level of the learners, and individual differences. It follows that teachers who are asked to implement active classrooms require additional support in the form of access to pedagogical instruction, modeling of best practices, and opportunities to create and deliver integrated movement lessons (Miller, Lindt, & McIntyre, 2014).

While classroom teachers typically lack experience directing physical activity, research indicates that they are willing to explore ways to promote physical activity during academic instruction, particularly if these activities are compatible with their philosophy and they are provided with appropriate support (Cothran, Kulinna, & Garn, 2010; McMullen, Kulinna, & Cothran, 2014; Raymond, 2013; Strampel et al., 2014; Webster et al., 2013). As discussed by Goc Karp, Scrubbs, Broan, and Kelder (2014), however, there are issues inherent in training classroom teachers to implement classroom-based physical activity. Teachers have identified challenges unique to the implementation of classroom physical activity including difficulty maintaining class control during activity, space constraints, and returning to on-task behavior after activity (McMullen et al., 2014; Strampel et al., 2014).

Structured professional development (PD) experiences have the potential to positively influence teacher behavior and are essential to building confidence in teachers toward implementing physical activity during the school day (Carson, 2012; Castelli, Centeio, & Nicksic, 2013; Goc Karp et al., 2014; Till, Ferkins, & Handcock, 2011). McMullen et al. (2014) and Goh et al. (2014) found that classroom teachers prefer activity breaks that are easy to implement, are connected to academic content, and that promote student enjoyment. McMullen et al. (2014) therefore suggested that related PD for classroom teachers focus on areas including: providing teachers with ideas for PA breaks that are easy to implement and do not disrupt classroom management and control; training on how to connect academic content to physical

movement; how to promote a school-wide effort in physical activity breaks; encouragement on selecting activity breaks that will be enjoyable to their unique group of students; and a consideration of teaching philosophies and priorities.

Purpose Statement

With the primary intent of better preparing school personnel to meet the previously referenced state mandate through the integration of movement in classrooms as a preferred instructional strategy, the state's public education officials organized a series of PD workshops in collaboration with leaders and representatives from the state's Department of Health and Human Resources, local colleges and universities, non-profit organizations, and a statewide health and physical education organization. The purpose of this study was to determine the perceived readiness of PreK-8 teachers and administrators to integrate physical activity into the academic classroom following participation in one of these day-long PD workshops using a retrospective pretest design. Further, this study sought to determine the long-term impact of these PD workshops and explore how physical activity was being integrated into the academic classroom.

Method

Participants

Participants in the study included PreK-8 classroom teachers and school administrators from the previously referenced state who attended a one-day PD workshop focused on integrating physical activity into the academic classroom ($N=146$). Following Institutional Review Board Approval and completion of the workshop, attendees were asked to participate in the study voluntarily. Participants ranged in age from 21-55 years and included males ($n=22$) and females ($n=124$). Participant teaching backgrounds were varied: 50 taught grades PreK-2; 51 taught grades 3-5; 37 taught grades 6-8; 13 were school administrators; and 8 self-identified as other. Fifteen participants indicated employment across multiple previous categories. With

respect to years of teaching experience: 54 (38.6%) had 0-4 years of experience, 32 (22.9%) had 5 to 9 years of experience, 27 (19.3%) had 10 to 14 years of experience, 7 (5%) had 20 to 24 years of experience, 5 (3.6%) had 20 to 24 years of experience, and 15 (10.7%) had 25 or more years of experience ($N=140$ total responses).

Procedure

Officials from the state's Department of Education organized two PD workshops focused on preparing school personnel to integrate physical activity into classroom instruction within the elementary and middle school context. Organizers held the workshops in the northern (Workshop 1) and southern (Workshop 2) geographic regions of the state to increase access. Attendance was comparable across sessions (Workshop 1=78 participants and Workshop 2= 68 participants). The one-day workshops included educational lecture sessions (morning) and interactive activity sessions (afternoon). The lecture sessions provided background information on children's physical activity, the related benefits, guidelines for best practice in integrating physical activity in the classroom, and evidence-based instructional resources like Active Academics® (<http://activeacademics.org/>). The afternoon sessions engaged attendees in demonstrations of sample activities across grade levels, content areas, and contexts (e.g., small space and large space). Immediately following the completion of each session, the participants were asked to complete an anonymous retrospective pretest to determine workshop quality and effectiveness. The PD workshop structure is described in greater detail in Table 1.

Instrument

Retrospective pretest designs are recommended as an alternative approach for determining change or learning based on pre-intervention behavior (Allen & Nimon, 2007; Campbell & Stanley, 1963; Lamb & Tschillard, 2005). This method is particularly useful in PD settings within which traditional pretest-posttest models are often impractical to administer based

on contextual constraints. Retrospective pretest designs afford researchers the added benefit of minimizing risk for ‘response shift effect’ as a possible source of invalidity ‘when participants are unable to give reasonably accurate estimates of their knowledge and skill levels on a pretest’ (Lamb & Tschillard, 2005, p. 1). In the present study, researchers used a previously developed and field-tested retrospective pretest instrument to measure the perceptions of participants across two levels: Level 1 Reaction to Quality and Level 2 Learning (Allen & Nimon, 2007). The first level includes nine items specific to workshop quality (e.g., coverage of important topics, sufficient detail, focus of discussion, learner participation) rated on a five-point Likert scale, ranging from 1 (poor) to 5 (excellent).

The second level includes three items addressing personal learning (participant understanding of content, ability to demonstrate comprehension, and readiness to apply concepts) using the same Likert scale. Each item is rated two times: (1) retrospectively before the workshop and (2) upon completion of the workshop. An open-ended prompt afforded participants the opportunity to supplement their ratings with written comments. Researchers added participant demographic questions for the purpose of data analysis and interpretation (e.g., workshop date, gender, grade levels taught, and years teaching). Measured across 75 PD sessions and over 1,200 responses, Allen & Nimon (2007) reported the following coefficient alpha values for the entire instrument (0.788 to 0.970), Level 1 subscale (0.905 to 0.992), Level 2 retrospective pretest subscale (0.876 to 0.994) and posttest subscale (0.754 to 0.990). Allen and Nimon called for replication across multiple settings to establish instrument validity.

Follow-up Survey

One year after the PD workshop, participants were asked to complete an online survey to assess their continued degree of personal learning (participant understanding of content, ability to demonstrate comprehension, and readiness to apply concepts). Using the same Level 2

prompts as above, open-ended items were added seeking to investigate how participants were implementing physical activity in the classroom. All initial workshop attendees were emailed a request to participate and a link to the online survey. A total of 52 participants (9 male, 43 female) responded to the online follow-up survey. Of these, 11 taught PreK-2, 13 taught grades 3-5, 11 taught grades 6-8, 7 were administrators, and 9 responded 'other.'

Data Analysis

Researchers used descriptive statistics to summarize participant demographics, reaction to workshop quality, and personal learning. Preliminary analysis indicated no significant differences between the two workshop groups at baseline for the dependent variables, so data were analyzed collectively. Measures of internal consistency reliability (Cronbach's Alpha) were determined for each survey level, as well as correlations among dependent variables. As an indicator of personal learning, three paired sample t-tests were conducted to estimate the impact of the workshop on participant understanding of the content, ability to demonstrate comprehension of the subject, and ability to apply concepts to an actual problem or situation. The SPSS statistical software package (version 21) was used for data management and analysis. Researchers reviewed participant responses to the open-ended questions to help interpret the statistical results.

Results

Internal Consistency Reliability

Internal consistency reliability of the instrument subscale measuring reaction to workshop quality (Level 1), personal learning retrospective pretest subscale (Level 2), and personal learning retrospective posttest subscale (Level 2) was investigated using Cronbach's Alpha. For the workshop quality subscale (Level 1), Cronbach's Alpha = .947 indicating excellent internal consistency reliability; all Cronbach's Alpha if item deleted scores were at or less than .945. For

the three retrospective pretest items (Level 2), Cronbach's Alpha = .930, indicating a high level of internal consistency reliability; all Cronbach's Alpha if item deleted scores were at or less than .913. For the three retrospective posttest items (Level 2), Cronbach's Alpha = .837, indicating a good level of internal consistency reliability; all Cronbach's Alpha if item deleted scores at or less than .832. All items were consequently retained for use in the analysis.

Workshop Quality

Items from the Level 1 subscale revealed that participants perceived the PD workshop to be of high quality. Item scores ranged from an average of 4.50 to 4.71 on a 5-point Likert scale, with the highest scoring items of 'the presenter created an atmosphere in which all or most learners participated' ($M=4.71, SD=.61$), 'the presenter responded to the learner's questions with appropriate and relevant answers' ($M=4.71, SD=.55$), and 'the presenter created an atmosphere in which all learners felt free to ask questions' ($M=4.7, SD=.54$). See Table 2 for a summary of participant responses related to workshop quality.

Personal Learning

All data were screened for assumptions of independence of observations and normality prior to analysis. Researchers conducted separate paired-samples t-tests to determine the impact of the PD on the participants' understanding of the subject, ability to demonstrate comprehension of the subject, and ability to apply concepts to an actual problem or situation. There was a statistically significant increase in participants' *understanding* scores from pre-workshop ($M=2.75, SD=.891$) to post-workshop ($M=4.46, SD=.514$), $t(145) = -23.624, p<.001$. Eta squared = .79, indicating a large effect size. There was a statistically significant increase in participants' *demonstrate comprehension* scores from pre-workshop ($M=2.61, SD=.890$) to post-workshop ($M=4.28, SD=.562$), $t(144)=-23.114, p<.001$. Eta squared = .79, indicating a large effect size. There was a statistically significant increase in the participants' *apply concepts* scores

from pre-workshop ($M=2.59$, $SD=.862$) to post-workshop ($M=4.26$, $SD=.613$), $t(144)=-23.412$, $p<.001$. Eta squared = .79, indicating a large effect size. See Table 3 for a summary of participant responses related to personal learning.

Outcomes

Impact on teacher behavior.

Results from the one-year follow up survey of a sample of 52 participants indicated a slight decrease from post-workshop scores. Despite this decrease, levels of personal learning remained favorable (see Table 3): understanding of the subject ($M=4.0$ $SD=.71$), ability to demonstrate comprehension of the subject ($M=3.83$ $SD=.83$), ability to apply concepts to an actual problem or situation in this subject area ($M=3.83$ $SD=.78$). On a five-point Likert scale (no effect=1 to major effect=5), 94.2% (49/52) of respondents indicated that their participation in the workshop had a moderate or major effect on their professional practice ($M=4.15$, $SD=.69$). Participants reported that they integrated physical activity into the classroom an average of 4.27 days per week ($SD=.99$), with the majority indicating that their current integration of physical activity in the classroom was somewhat more (24/51, 47.06%) to much more (12/51, 23.53%) than in previous years.

Impact on student behavior.

On a 5-point Likert scale of strongly disagree (1) to strongly agree (5), participants reported that after integrating physical activity into the classroom, students were more focused and on task ($M=4.20$, $SD=.69$), they observed a decrease in behavioral issues and referrals ($M=4.08$, $SD=.84$), students enjoyed being physically active during lessons in the classroom ($M=4.54$, $SD=.67$), and physical activity breaks were motivational and enjoyable for students ($M=4.58$, $SD=.53$).

These data were supported by open-ended responses in which participants further described observations regarding their use of physical activity in the classroom. For example, teachers described positive outcomes of physical activity implementation on student behavior, focus, and motivation by stating, “behavior is better, students are able to focus better, wiggle and fidget less” and “It increases my students’ engagement during and after the activity.” Another teacher noted, “It’s a wonderful positive behavior reinforcement! Students want to earn their brain breaks and it’s great to motivate them.” Teachers reported a similar impact of physical activity implementation on student learning:

Students enjoy the activity and therefore seem to retain the lesson being taught. Example:
They could not catch on to prepositions... I taught the activity using the plane, chair, small dry erase boards and WOW! (90%) of the students passed their preposition test!!!!
Amazing.

Lastly, one teacher noted positive outcomes of physical activity integration in many areas by describing that, “behaviors decreased, attention increased, love for school increased, dread for schoolwork decreased, fine motor increased, core strength improved (able to sit still for longer periods during necessary not-so-fun instructional time).”

Discussion

The PD workshops evaluated in this study provided classroom teachers and school administrators with resources to incorporate more physical activity throughout the school day, training on comprehensive school physical activity programming, and innovative ways to incorporate physical activity into the academic setting. Findings support that the workshops were effectively delivered, made a significant impact on the perceived readiness of teachers to integrate movement into their classrooms, and had a positive influence on teacher professional practice. Beliefs of personal learning remained favorable from post-workshop to one year follow

up, and resulted in positive outcomes on student and teacher behaviors. The following section includes a discussion of four factors that have been found to contribute to the effectiveness of PD and related implications for the current study: (1) student-centered instruction, (2) content specificity, (3) professional collaboration, and (4) school support (Armour & Yelling, 2004a, 2004b, 2007; Betchel & O'Sullivan, 2006; Taliaferro & Housner, 2009; Keay & Lloyd, 2009; McCaughtry, Martin, Kulinna & Cothran, 2006).

Student Centered Instruction

Teachers enter most PD workshops wanting ideas and resources that will positively impact their teaching – what to do, how to do it, and so forth. Once established, teachers begin to look for indicators that this new information will increase students' positive learning experiences (Patton & Parker, 2014). Teachers know that most all children enjoy physical activity and would like to have more opportunities to be physically active in schools, but are often reluctant or lack the competence to incorporate physical activity in their classrooms or throughout the school day. Cothran et al. (2010) determined that when classroom teachers integrated physical activity in the academic classroom, they were better able to create an exciting and motivating learning environment. The PD workshops strived to demonstrate actual instructional practices that teachers could adopt to include developmentally appropriate physical activities. One teacher commented that she, "would like to see more workshops so more teachers could attend and understand implementation is not difficult."

Classroom teachers often cite needs pertaining to integrating movement into the classroom such as information on pedagogical strategies for classroom management, locating and using good resources that will provide active lesson ideas, and how to make movement meaningful and enjoyable for the students (Miller et al., 2014). The workshop presenters in the current study were mostly veteran teachers who discussed instructional strategies necessary to

make the activities run smoothly, prompted participants to share ideas for adaptations to meet the needs of their students, and made the teachers feel comfortable and confident in integrating physical activity with little disruption to the normal classroom environment. Participant comments such as, “I learned so many ways to engage my kiddos, especially in areas they tend to not enjoy,” and, “the speakers were great and the activities they shared were ones kids would enjoy and not much prep work for teachers” are all indicators that the workshop content helped participants view the integration of physical activity into their classrooms as something they can do, that their students will enjoy, and that may help them better engage in learning.

Content Specificity

A common criticism of PD workshops for teachers is the limited relevance of the content covered and/or its application to practice. By contrast, PD should engage teachers with content in new ways that promote innovation and increase professional curiosity, growth, and empowerment (Betchel & O’Sullivan, 2006; Parker, Patton, Madden, & Sinclair, 2010; Patton & Parker, 2014; Patton, Parker, & Pratt, 2013). Teachers want concrete examples of movement activities and suggestions for adaptations and better yet, self-creation. They also want to observe, and then participate in, best practices of movement integration. During the workshops in this study, educators had the opportunity to experience firsthand specific activities and how they could be implemented in the classroom.

The workshop lecture sessions provided general education content that crossed all grade levels and content areas and were relevant and important for today’s schools. As displayed in Table 1, afternoon workshop activity sessions were organized according to grade levels and content areas, with grade and content-specific experiences for participants. Activities not only focused on giving students a short break from normal classroom activity, but on enhancing academic content in areas such as math, language arts, social studies, science, health, and

physical education. Using the resource used for the afternoon sessions, Active Academics® (www.activeacademics.org), participants have the ability to search by subject and grade level to find content that is relevant to their students' academic subjects through alignment with the Core Content Standards in math and language arts, and with the National Content Standards in other subject areas.

If one teacher or one administrator has a positive PD experience and feels empowered to provide physical activity opportunities for their children, he/she may become an advocate for integrating more physical activity into the classroom (Patton et al., 2014). Teacher advocacy may begin by sharing with others in their schools what they have learned and how they plan to implement more movement in their classroom. The eventual demonstration of advocacy may be to share resources, encourage other teachers to do what they are doing, and become leaders of the 'physical activity movement' in their schools. Encouraging post-workshop comments from participants included, "I am excited to get back and implement more physical activity into my classroom and hopefully light the fire throughout the school," and "can't wait to take this back to my school."

Professional Collaboration

PD is most effective when it occurs within collaborative networks of professionals allowing frequent opportunities for peer interaction (Armour & Yelling, 2007; Deglau, Ward, O'Sullivan, & Bush, 2006). This collaboration can involve a range of key stakeholders including teachers, school administrators, professional consultants, state association members, and university researchers (Taliaferro & Housner, 2009). Development of the PD workshops in this study involved collaboration across a range of the state's key stakeholders who share a common interest in the successful implementation of the new statewide school policy regarding increased physical activity in PreK-8 schools. Stakeholders including the Department of Education's

Office of Secondary Learning, the Department of Health and Human Resources, the state health and physical education organization, university researchers and interventionists, and others, each made unique contributions to the success of the workshops (e.g. funding, facilities, resources, presenters, etc.). This collaborative partnership also led to the workshop content that allowed for peer-to-peer interaction.

Miller et al. (2014) identified the importance of modeling of best practices in helping teachers to feel comfortable integrating movement into their classroom. As mentioned earlier, the workshop presenters were mostly veteran teachers who could share personal experiences in movement integration. The presenters also asked participants to discover ways to change the activities to make them most applicable to their classroom and to share their ideas with the session group. The peer-to-peer interaction between the participants, and between the participants and presenters, allowed for effective modeling during workshop sessions.

A limitation of the workshops was the lack of time for all participants to prepare lesson activities and present them to their peers for feedback. In planning future workshops, more peer interaction that fosters planning and practice opportunities should be considered as this would give the teachers more confidence in their pedagogical skills and knowledge to successfully integrate physical activity with their students (Miller, 2014). Also, key stakeholders should work to facilitate future opportunities for those already trained that foster peer-to-peer interaction and encourage idea sharing and collaboration beyond the workshop.

School Support

The sustainability of any PD effort is dependent in part on school support that helps to communicate the related value. This support can come in multiple forms including providing the necessary resources for teachers to participate, allocating funds to purchase necessary supplies and equipment, and granting access to continued technical support focused on the transfer of new

information into school classrooms. In fact, PD efforts that are not fully supported by school administrators and are poorly resourced are often perceived to be of low value and resisted by teachers (McCaughtry et al., 2006).

The PD workshops evaluated in this study were fully funded by the state Department of Education and its partner agencies. Teachers' travel expenses and the cost of continuing education credits were covered. The fact that 13 school administrators were in attendance supports that they perceived value in the workshop content and may prioritize school physical activity integration. This administrative support and prioritization can lead to additional physical activity opportunities for all students, more resources, and increased funding for teachers to provide these opportunities.

At the conclusion of the workshops, participants received a flash drive with all materials presented in the sessions, and information on accessing the online Active Academics® resource. Educators expressed value in these shared resources by providing comments such as, "very good tools, thank you for the jump drive and all of the resources to take back and give to my other teachers." By having the additional external resources provided, teachers are better positioned to integrate PA in the academic classroom, as well as to educate and gain support from their school community. Interestingly, follow up data indicated that not all participants were utilizing these resources despite their continuous availability, with 62.75% of respondents indicating they use the free Active Academics® online resources sometimes, often, or a great deal. Future research should explore how to further promote the use of these readily available external resources to maintain and increase physical activity in the classroom.

In order for all teachers to 'buy in' to physical activity integration in the classroom, school administrators have to recognize the value of comprehensive school physical activity programs, encourage a school culture dedicated to promoting lifelong physical activity, and

support teachers by providing additional PD opportunities (Erwin et al., 2013). Administrators also need to be educated on the value and benefits of physical activity for children and how to best implement physical activity throughout the school day. Although the workshops developed in the present study continue to reach some classroom teachers throughout the state, there are many more teachers who have not been reached. These points were supported by follow-up responses in which teachers suggested that regional offerings and more opportunities around the state for workshops, additional workshops/activity trainings, equipment and resources, training for administrators, and short refresher courses would be helpful in providing PA opportunities. Therefore, it is imperative that four strategies are the focused in order to continue to promote children reaching the recommended 60 minutes of physical activity each day: (1) to provide PD workshops and presentations targeting school administrators, (2) to provide continuing PD opportunities and refresher courses for those already engaged in these workshops and others, (3) consider regional PD opportunities to reach a wider target audience, and (4) find new avenues to engage those new to physical activity integration in the schools.

Conclusion

The purpose of this study was to determine the perceived readiness of teachers and administrators to integrate physical activity into the classroom following participation in a PD workshop using a retrospective pretest design, and to explore the effects of this PD workshop after one year. The findings indicate that well-designed PD emphasizing student-centered instruction, content specificity, professional collaboration, and school support can positively influence teacher readiness to integrate movement into their classrooms and have a resulting impact on teacher professional practice.

The findings support that comparable PD opportunities are needed regarding the implementation and evaluation of new state or local policies in school-based settings. When

confronted with policy changes that directly impact classroom instruction, administrators at the school, district, and state levels are often challenged to provide teachers with access to quality training, supporting instructional resources that will enable them to experience some degree of immediate success. As described by one participant, the PD opportunities examined in this study provided a, “Great tangible overview of policy and how it looks in practice.” Due to these initial successes, additional research is needed to explore in more detail the reach and influence of the PD workshops on teacher and student behavior through the use of interviews, focus groups, and site visits.

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Table 1

Overview of All-day Workshop Format and Content

Morning Education Lecture Session Focus Areas				
Topic 1	State policy and school physical activity (PA)			
Topic 2	Comprehensive School Physical Activity Programs (CSPAP)			
Topic 3	Need, Benefits, and Recommendations for Children’s Physical Activity			
Topic 4	Classroom Physical Activity – Lessons Learned from In-service Teacher			
Topic 5	Resources for Classroom Physical Activity Integration			
Afternoon Activity Sessions (40 minutes each) Participants Rotated to All Applicable Sessions by Groups K-2A, K-2B, 3-5, 6-8				
Session 1	K-2 (A) Math / Science	6-8 Lang Arts / Social Studies / Brain Breaks	3-5 Big Play Space	K-2(B) Computer Lab (Resources)
Session 2	K-2(B) Math / Science	3-5 Lang Arts / Social Studies	6-8 Lunch Break/Drop In	K-2(A) Computer Lab
Session 3	3-5 Math / Science	K-2 (A) Lang Arts / Social Studies	K-2(B) Big Play Space	6-8 Computer Lab
Session 4	6-8 Math /Science/ Brain Breaks	K-2 (B) Lang Arts / Social Studies	K-2(A) Big Play Space	3-5 Computer Lab

Table 2

Descriptive Statistics for Level 1 Reaction to Quality

The presenter(s)...	Mean	SD
Covered important topics of the content area	4.59	.60
Covered topics in sufficient detail	4.55	.61
Kept the discussion focused on the topic	4.62	.56
Refocused the discussion when it began to wander	4.58	.59
Created an atmosphere in which all or most learners participated	4.71	.61
Created an atmosphere in which all learners felt free to ask questions	4.70	.54
Responded to the learner’s questions with appropriate and relevant answers	4.71	.55
Asked questions of learners which lead to lively and relevant discussions	4.50	.70
Asked questions of learners which were relevant to topic objectives	4.59	.61
Overall mean	4.62	

Note: The following response options were used (1) Poor, (2) Fair, (3) Good, (4) Very Good, and (5) Excellent.

Table 3

Descriptive Statistics for Level 2 Personal Learning

	Pre		Post		Follow up	
	Mean	SD	Mean	SD	Mean	SD
My understanding of the subject	2.75	.891	4.46	.514	4.00	.71
My ability to demonstrate comprehension of the subject	2.61	.890	4.28	.562	3.83	.83
My ability to apply concepts to an actual problem or situation in this subject area	2.59	.862	4.26	.613	3.83	.78

Note: The following response options were used (1) Poor, (2) Fair, (3) Good, (4) Very Good, and (5) Excellent.