



The Colorado Health Foundation™



Raising the Grade:

Improving the Quality of
Colorado's Physical Education

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Photography by James Chance. Cover photos from left to right: Conifer, CO; Boulder, CO; Hayden, CO.

Table of Contents

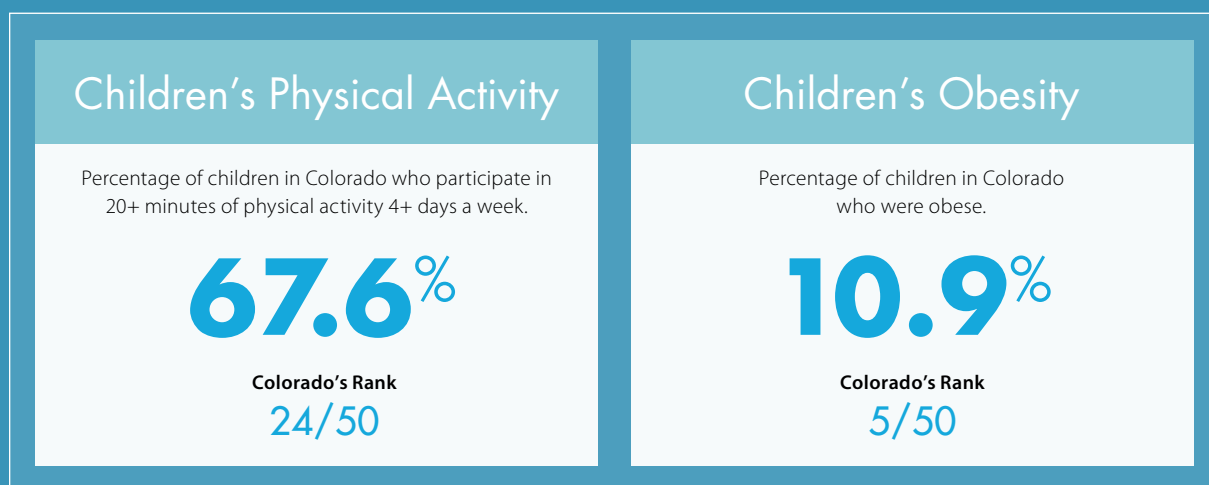
Introduction.....	4
Testing the Theory for Improving Physical Grade.....	6
Measuring Progress.....	7
The Numbers: What the Movement and Fitness Data Shows	8
Insights and Observations: What the Interview Data Shows.....	10
In the Classroom: Challenges and Opportunities	10
The Funding Opportunity: Challenges and Opportunities.....	14
Concluding Summary.....	18
Recommendations.....	19

The data presented in this document is based on the evaluation and analysis conducted by ICF International in 2014.

Introduction

Physical activity is a Colorado hallmark, but it doesn't apply to nearly a third of our children. Colorado barely makes the top half of states for the percentage of young people who are physically active on a regular basis, despite the well-documented benefits of being active. Unlike Colorado's adults who have the highest rates of physical activity in the nation (#1)¹, Colorado's children rank in the middle of the pack (#24)², according to the 2015 Colorado Health Report Card.

Regular physical activity helps keep children healthy and promotes behavior that can reduce the risk of obesity, diabetes and other chronic diseases in adulthood. Along with physical health benefits, regular physical activity promotes cognitive development at a crucial age in childhood. Active children often experience improved physiological and social well-being, as well as higher academic achievement.³ Because kids spend so much of their waking hours at school, it is one of the best places to incorporate physical activity. Unfortunately, this is not the case for most schools.



1. <http://www.coloradohealth.org/yellow.aspx?id=7117>, (2015)
2. <http://www.coloradohealth.org/yellow.aspx?id=7115>, (2015)
3. <http://www.coloradohealth.org/SpotlightPhysicalActivity/>, (2015)

Nationally only five percent of students get the recommended amount of physical activity in schools. The Center for Disease Control and Prevention and the American College of Sports Medicine recommend 60 minutes of physical activity each day of the week for children and adolescents and the majority of the 60 minutes should involve moderate to vigorous activity. Physical education (PE) is one of the primary ways for students to reach the daily recommendation of 60 minutes of moderate to vigorous physical activity (MVPA). A typical PE class can provide 23 or more minutes of MVPA.

High quality PE programs help increase levels of MVPA during class time. A standards-based PE program provides students the opportunity to learn skills necessary to participate in a variety of physical activities for a lifetime. Such programs are inclusive, fun, safe and developmentally and culturally appropriate. In addition, PE does not negatively affect academic performance.⁴

In Colorado and around the country, schools are faced with making difficult decisions about how to offer PE and physical activity time given budget constraints, scheduling for core academics and the pressures of standardized testing. Despite these challenges, the Colorado Health Foundation believes that with the implementation of a quality, standards-based physical education program, students can be more active during the time available, improving their health and ability to learn.

While the research supports making improvements, participants in the PE initiative cited challenges to conducting effective PE programs, including:

- Lack of equipment
- Increase of academic demands on class time
- Lack of technology, a critical tool for engaging 21st century students
- Inconsistent and outdated standards and curricula for PE
- Lack of support from administrators, fellow teachers and community at large

Compounding the problem is that the median PE budget for schools in the United States is only \$764 per school year (\$460 for elementary, \$900 for middle, and \$1,370 for high schools)⁵, leaving schools with few resources to revamp their programs to meet the needs of 21st century students.



Photo by James Chance. Hayden, CO.

4. "Health is Vital for Student Success: An Overview of Relevant Research" <http://www.coloradoinitiative.org/wp-content/uploads/2015/02/MakingtheCaseFF.pdf>, (2015)

5. "The Shape of the Nation," National Association for Sport and Physical Education <http://bit.ly/1xliemE>, (2012)

Testing the Theory for Improving the Physical Education Grade

As part of its Create Healthy Schools strategy, the Colorado Health Foundation invested more than \$11 million since 2010 in 289 schools across 41 Colorado school districts to improve the quality of physical education (PE). This investment took the form of a funding opportunity called “PE Quality Improvement,” which provided grantees with up to three years of funding, including one year of planning and up to two years of implementation.



Standards based PE + Increased MVPA =
**IMPROVED FITNESS, HEALTHY BMI
AND LIFELONG SKILLS**

To receive grant funding, applicants for the PE Quality Improvement Funding Opportunity had to be a Colorado school district, Board of Cooperative Educational Services (BOCES) or charter school. Applicants also had to meet the following criteria:

- Demonstrate the understanding of and commitment to PE quality improvement;
- Participate in trainings, program and evaluation activities;
- Develop plans for sustainability of improved PE after the end of the Funding Opportunity.

Districts, BOCES and charter schools with 40 percent or more students eligible for free or reduced lunch received priority consideration.

The primary focus of the Funding Opportunity was to assist grantees with implementing a standards-based PE curriculum to increase the amount of time students spent in MVPA during PE classes. To create their PE curriculums, grantees selected from one or more evidence-based PE instructional resources identified by the American Heart Association Science Review and the Alliance for a Healthier Generation. The choice of instructional resources included:

- SPARK (Sports, Play, and Active Recreation for Kids)
- Five for Life
- Fitness for Life
- EPEC (Exemplary Physical Education Curriculum)
- CATCH (Coordinated Approach to Child Health)
- Project Adventure

Using these instructional resources, districts developed their own PE curriculum, which were required to align with the new Colorado Comprehensive Health and Physical Education Standards. Part of the funding went toward training grantees to better understand these new standards and select the most appropriate instructional resources from which to create a new PE curriculum for their schools.

This training included the following steps:

1. Each funded district's grant coordinator and PE teachers participated in the Colorado Department of Education's introductory training for these new standards, called "Unpacking the Standards." The training covered the use of the Colorado Academic Standards Crosswalk for Comprehensive Health and Physical Education to determine district needs. Information was also provided on the purpose of the grant, goals, expectations, and requirements.
2. After completing the Crosswalk, each district formed PE teacher-led committees to select the instructional resources that would best meet the specific needs of the schools in their districts.
3. All PE teachers then completed trainings in the instructional resources chosen by their committees. With a thorough knowledge of selected instructional resources, PE teachers were better equipped to effectively integrate them into their curricula.

The grants covered the cost of all training requirements, as well as support and technical assistance for the PE teachers during the training period. The technical assistance provider Athletic Excellence conducted direct observations of PE teachers and students during PE classes using the System for Observing Fitness Instruction Time (SOFIT) during the planning and implementation years. In addition, grantees were required to report student enrollment numbers and the number of PE minutes offered at the end of each school year during the funding opportunity. School districts and BOCES also designed their own evaluation plans for the implementation years to determine the effectiveness of the implementation plan and guide ongoing decision making and professional development. A variety of evaluation measure were selected such as; fitness assessments, tracking MVPA during PE class with the use of heart rate monitors and/or pedometers, and student and teacher satisfaction surveys.

Measuring Progress

The Colorado Health Foundation incorporates evaluation throughout the life cycle of the Foundation's work so that we can better learn how to improve in real time. This provides us with opportunities to capitalize on successes, shift our approach when necessary, and consider what we might need to change in order to make the largest impact on the problems we are committed to solving.

In April 2014, the Foundation engaged ICF Macro, Inc., to interview a cross section of participants, as well as analyze the fitness data collected. Following is a summary of their findings.



Photo by James Chance. Boulder, CO.



The Numbers: What the Movement and Fitness Data Shows

All the school districts and BOCES created and adopted a K-12 curriculum document that aligned with the Colorado Physical Education Standards. The analysis of the data from this initiative revealed that the implementation of high-quality, standards based PE programs and a focus on increasing MVPA during PE class is showing signs of students moving more during PE and improvements in students' fitness levels.

Moderate to Vigorous Physical Activity

Through a direct observational technique, System for Observing Fitness Instruction Time (SOFIT), it was determined that, on average, students spent more time moving in a moderate to vigorous manner as the initiative progressed. Specifically, there was an increase in the proportion of time that students spent in MVPA, from 46.1 percent to 59.1 percent between the Planning Year and the Implementation Year 2 (see [Table 1](#)). This increase was seen most often in the elementary grades.

Table 1: Percent of time spent in MVPA by program year and grade levels

Setting	Planning Year		Implementation Year 1		Implementation Year 2	
	N	Average	N	Average	N	Average
Elementary	21	38.4%	21	45.5%	21	58.2%
Middle	14	51.6%	14	48.8%	14	59.3%
High	13	52.6%	13	50.0%	13	60.4%
Total	48	46.1%	48	47.7%	48	59.1%



Fitness Data

Overall, both boys and girls showed improvement in all of the assessments used to measure fitness levels (see [Table 2](#)). Students' fitness levels showed significant improvement for all but the aerobic capacity assessment. With the exception of the aerobic capacity test, more than half of the students, regardless of gender, met or exceeded the fitness standards.

Table 2: Percent of students who met or exceeded fitness standards by assessment type

Assessment	BOYS				GIRLS			
	Pre		Post		Pre		Post	
90-Degree Push-ups	62.2%	(n=135)	72.8%	(n=158)**	66.4%	(n=95)	71.3%	(n=102)
Back-saver Sit & Reach	67.7%	(n=2290)	69.9%	(n=2365)***	68.9%	(n=2130)	73.0%	(n=2257)***
Curl-ups	73.6%	(n=1298)	82.7%	(n=1458)***	68.1%	(n=985)	76.9%	(n=1113)***
Flexed-Arm Hang	56.1%	(n=220)	64.8%***	(n=254)	46.2%	(n=135)	51.4%	(n=150)
Trunk Lift	58.7%	(n=199)	71.4%**	(n=242)	67.0%	(n=199)	78.5%**	(n=233)
Aerobic Capacity	12.6%	(n=47)	13.9%	(n=52)	20.2%	(n=55)	21.0%	(n=57)

*p<0.05, **P<0.01; ***p<0.001

For the fifteen schools that measured BMI, the proportion of students classified as obese remained essentially unchanged with a very small increase in the proportion of students who were classified as overweight (see [Table 3](#)). BMI measurements were taken of students in 2013 (pre) and 2014 (post). These results could be in part due to the small number of students in this sample, but also is likely due to the short period of time between measurements.

Table 3: Percent of students who are overweight or obese by gender (15 schools, n=1,095 students)

Assessment	BOYS				GIRLS			
	Pre		Post		Pre		Post	
Obese Students	15.6%	(n=171)	14.8%	(n=162)	16.1%	(n=131)	15.7%	(n=128)
Overweight Students	12.8%	(n=140)	14.6%	(n=160)	13.8%	(n=113)	15.6%	(n=127)
Total	28.4%	(n=311)	29.4%	(n=322)	29.9%	(n=244)	31.3%	(n=255)

Insights and Observations: What the Interview Data Shows

Interview Methods

To understand the less tangible results of the Funding Opportunity, as well as the effectiveness of the Funding Opportunity itself, ICF conducted semi-structured, open-ended telephone interviews with participants from across the funded districts/BOCES, Foundation staff and technical assistance provider. Interviews were completed with 29 PE teachers, seven grant coordinators, six district/BOCES administrators, three Foundation staff members and the technical assistance provider. Candidates from each participant type were chosen using a random selection process and interviews lasted between 25 minutes and one hour. All telephone interviews were audio recorded and transcribed for purposes of analysis and reporting.

In the Classroom: Challenges and Opportunities

There was general agreement across most respondents about what worked well in the classroom and where improvements are needed if the Foundation decides to extend this Funding Opportunity to other schools and districts in the future.

In this section:

Tailored PE Curricula

Equipment and Facilities

Technology

Moderate to Vigorous Physical Activity

Policy Changes

Funding Priorities

Stakeholder Support

Sustainability

Tailored PE Curricula

The process of curriculum development was a very positive aspect of the Funding Opportunity. By participating in the Crosswalk and the instructional resources trainings, PE teachers gained a better understanding of how their lessons contributed to state PE standards and were better equipped to develop curricula that addressed the specific needs of their schools/districts. This curriculum development process increased PE teacher confidence about how to structure their classroom and lessons in the best way to improve physical fitness among students, appeal to their students and take advantage of their professional strengths. Additionally, administrators mentioned that having common curricula and PE goals would help with teacher assessments.



Equipment and Facilities

PE teachers felt the new and updated equipment was instrumental in increasing student physical activity and satisfaction. The new equipment facilitated lessons and activities where all students could stay active, instead of waiting their turn to share a piece of equipment. For example, with sufficient numbers of balls, PE teachers were able to keep all students in a class moving at the same time, allowing for increased minutes engaged in physical activity. Previously unaffordable types of equipment such as yoga mats, resistance bands, medicine balls, dumbbells, etc., not only expanded the types of activities available but also increased interest and enthusiasm among students.

However, teachers, grant coordinators, administrators and others felt the timing and processes of ordering new PE equipment could have been smoother. Related to timing, some schools felt rushed, having to order equipment before completion of their curriculum development and training. This resulted in ordering too much of one type of equipment and not enough of another. In addition to feeling rushed, some respondents questioned the quality of some of the equipment.

One administrator was frustrated by the extensive process required for purchasing in his district, which required approval from county officials and lawyers. One district policy required a bidding process for equipment purchases, adding logistical challenges.

With regard to facilities, a few teachers mentioned that without enough space or activity-specific facilities, it was difficult to incorporate the new PE standards. Some teachers had difficulty finding enough space to conduct classes, while one teacher conducted three different classes in one gym simultaneously. Not all schools had a dedicated gymnasium and many made due with shared space in the cafeteria.

Technology

Incorporating technology into the PE curricula was critical to engaging already tech-savvy students in new ways; increasing time spent in MVPA; tracking fitness goals; and compiling data to build support for PE among administrators and other decision makers.

With the addition of technology, PE teachers were able to track student fitness. Specifically, iPads allowed teachers to collect and manage student data, access instructional resources and take videos to show students what they are doing right or wrong in a particular activity. According to teachers and other respondents, students' ability to track their activity levels with heart rate monitors or pedometers, as well as their fitness over time using WELNET software or other resources, improved their understanding of exercise and fitness. Respondents believe this understanding led to an increase in the students' enthusiasm for PE class. In addition, the ability to collect these student data helped PE teachers understand the results of what they were doing, motivated students and provided data that could be shared with administrators to build support for PE.

While technology modernized PE classes, some respondents cited a variety of challenges implementing new equipment. Some schools had limited access to computers during the day, while others had to wait to use the new technology until Wi-Fi was set up in the gym.



Photo by James Chance. Hayden, CO.

Moderate to Vigorous Physical Activity

Most importantly, as a result of new curricula, equipment and other resources, most respondents believed students were moving more during PE classes, and likely engaging in more MVPA. The analysis of SOFIT data from participating schools supports this belief. Implementation of new curricula resulted in maximized movement and increased MVPA during class time. The curricula also provided methods for positive reinforcement to increase student focus and keep activities fun.

However, several respondents mentioned the time PE teachers had with their students was often limited. This could include the length of individual classes or the frequency of PE classes; it was difficult to achieve goals when the students were only in PE class once or twice a week. Related to this, at least one teacher mentioned that schools tended to place PE class on the “chopping block” when the administrators see low test scores in other subjects like math.

Policy Changes

One district changed their PE waiver policy for high school students as a result of the initiative. Previously students in this district were allowed to waive PE graduation requirements if they participated in an interscholastic sport and/or band. In addition this district added a Lifetime Fitness PE course as part of the graduation requirement. However, nearly all grant coordinators and administrators interviewed said there had not been any change in policy at the school or district levels as a result of the initiative. One respondent mentioned that it was a potential missed opportunity by school districts that the initiative did not result in more policy changes.



“There’s not been any major policy or wellness policy, but I think that will come. They have all been working on updating their wellness policies, so it will happen.”

— Administrator

Stakeholder Support

Generally respondents noted an increased level of support and recognition of the value of improving PE standards among school stakeholders. Many respondents appreciated help from their administrators, particularly those that made it possible for all teachers to attend trainings, as well as those who provided adequate time for daily PE classes. One superintendent valued PE and wellness enough to incorporate the new PE standards into summer school. Another BOCES executive director advocated for extending the grant coordinator position an additional year after the Funding Opportunity ended; training teachers on data collection and analysis using the heart rate monitors and pedometers; and increasing the amount of time students are engaged in moderate to vigorous physical activity. The technology department in one district enhanced the Wi-Fi in the gymnasium to enable the use of iPads and scheduled district-wide iPad training for PE teachers. Another report noted district support that led to creation of a fitness room to be used for PE classes and by community members.



Several teachers indicated that telling their students about the value of the Funding Opportunity, excited and motivated them to participate in more movement and activities. A few teachers stated that communications sent home to parents, either through existing systems or newsletters, increased their awareness, involvement and enthusiasm for the new PE standards.

Newer teachers who had experience with the new standards and processes in their recent formal academic training were able to adapt to the changes more easily. However, not everyone involved was onboard.

While skepticism to the changes to improve PE was somewhat rare, it created challenges when it did occur. Only two teachers shared that there was skepticism from the community, school administration or parents because of the belief that PE should not be a priority. One PE teacher stated that the biggest challenge was educating parents about the importance of PE. Two administrators indicated that a few teachers and principals felt the PE teachers were not motivated enough to develop the curriculum or because principals were not happy with the amount of time PE teachers were away from their classes for training and other activities. Some experienced PE teachers were convinced their way of doing things was best and struggled with changing to a standards-based curriculum that focused on increasing MVPA. Some teachers noticed that their colleagues without formal degrees or backgrounds in PE found it difficult to grasp the new concepts and curriculum. Finally, some of the students were resistant to the new activities and games that brought them out of their comfort zones during a time that can be particularly challenging - teenage years.

Sustainability

There was general consensus among the different respondent types that some aspects of the new PE curricula will be easier to sustain than others. Respondents were optimistic that the equipment, curricula, improved teacher knowledge and skills training would contribute to the sustainability of PE. Respondents also felt the current group of PE teachers had the training and equipment to continue teaching the new curricula. Also mentioned was the new level of collaboration and networking among PE teachers, allowing for continued information sharing and peer-to-peer support.

These same respondents also discussed a number of potential barriers to sustainability. While districts were confident that they would sustain the new curricula, there was concern about the ability and commitment to train incoming PE teachers on the new curricula and technology. Smaller districts might have the biggest challenges in providing training to new PE teachers. Similarly, some schools or districts would have to eliminate PE teacher positions that were added as part of the initiative, putting pressure on the remaining staff to maintain the new standards. The loss of the grant coordinator positions will also be challenging as they served the important function of coordinating professional development and communication across schools in a district.

Another potential barrier to sustainability is that, over time, new equipment will deteriorate and need to be replaced. Without new funds to replace the equipment teachers would have to eliminate certain activities from their curriculum. Similarly, maintaining software subscriptions (e.g., WELNET) would be an expense that districts might not be able to afford.

Despite these challenges, the general consensus among respondents was that districts would do their best to sustain the new curriculum and standards and would have to find ways to maintain equipment, upgrade technology and train new PE teachers. The improved profile of PE among students, teachers, administrators and parents might help to convince decision makers to allocate sufficient funds to maintain the new PE standards.

The Funding Opportunity: Challenges and Opportunities

All grantees agreed that there was tremendous benefit to participating in the PE Quality Improvement Funding Opportunity. However, some improvements are needed if the Foundation decides to extend this Funding Opportunity to other schools and districts.

In this section:

Implementation and Structure

Training and Professional Development

PE Teacher Collaboration

Technical Assistance and Administrative Support

Financial Contributions to Sustain Grant Efforts

Implementation and Structure

Teachers, administrators, grant coordinators and the technical assistance provider all mentioned the timeframe of the Funding Opportunity was long enough for PE teachers to examine and understand the needs of their schools; develop the goals for improving PE; and implement the new curricula.

Multiple respondent types felt the planning year was particularly important because it gave sufficient time to learn the state standards, select instructional resources, develop comprehensive curricula, select the proper equipment, and learn (through training) how to implement the activities and lessons included in the new curriculum. In general, the planning year activities created a strong foundation for carrying out the new curricula.

While the PE teachers appreciated the learning opportunities, many were uncomfortable being away from their classes for the amount of time required to participate. Their absences created a burden for administrators who were responsible for finding substitutes to cover classes, which was problematic when all PE teachers in a school or district were out at the same time. Some administrators requested trainings be moved to non-contact days (i.e. professional development days or weekends), which resulted in reduced attendance from PE teachers who had family obligations, scheduling conflicts or coached sports teams.

Multiple teachers mentioned that the additional work load and time needed to meet the Funding Opportunity requirements were more than they anticipated and could be reduced or streamlined. Some teachers found it overwhelming to complete the Crosswalk, review curricula and attend trainings, while maintaining their normal teaching responsibilities and leadership roles (e.g., coaching and leading after-school programs). Related to this, the new PE curriculum often demanded time from PE teachers, especially for those that taught other subjects along with PE, such as math and science. One example provided was the paperwork required by the Funding Opportunity, as well as the extensive editing of curricula required by the grant coordinators. Although an orientation to the history, goals and expectations of the Funding Opportunity were part of a required training in the planning year, some respondents felt unclear about it. Multiple opportunities to revisit goals over the course of the project might help.



Training and Professional Development

All PE teachers mentioned that the meetings and trainings they attended were the most valuable part of the entire Funding Opportunity. Because instructional resources like SPARK and others were the primary source of curriculum material for the grantees, training in those specific resources ensured the PE teachers were well versed in their design and organization. For example, SPARK instructors led teachers through different activities and games within the curriculum, providing demonstrations of how to properly implement the lessons, while noting the activities' purpose. Equipped with that in-depth knowledge, PE teachers were able to more effectively integrate their chosen instructional resources into their curricula.

Through these meetings and trainings, PE teachers gained a better understanding of how and why they were improving PE instruction in their schools and districts. The trainings also helped build knowledge and skills among PE teachers for activities, such as dance or yoga, that they were either unfamiliar or uncomfortable teaching otherwise.

“I got so many ideas just sitting through the trainings. They were ideas that I could utilize right away and take back.”

— PE Teacher

PE Teacher Collaboration

All respondent types mentioned the development of strong networks of PE teachers as an important result of the Funding Opportunity. By attending all of the meetings and trainings together, the PE teachers bonded over the shared experience. The PE teachers estimate their network includes more than 40 professionals that mutually benefit from opportunities to collaborate, share ideas and innovations. In addition, teachers are continuing many of these collaborations during professional development days and outside of school functions. Prior to the Funding Opportunity, professional development days in schools focused primarily on math and English, activities that didn't feel relevant to PE teachers. Now, they may use this time more productively to gather and discuss topics directly related to their work.

Technical Assistance and Administrative Support

All respondent types appreciated the technical assistance and the management support (via the grant coordinator position). The technical assistance provider guided teachers through the new PE standards, helped them write their new curricula and was available for technical guidance any time teachers had questions or concerns. The grant coordinators for each district/BOCES served as an important point of contact with the Foundation and organized activities across entire districts, reducing the potential burden for participants.



Photo by James Chance. Denver, CO.

Financial Contributions to Sustain Grant Efforts

The Funding Opportunity raised the awareness and importance of PE among district administrators and school board members. At the end of the Funding Opportunity seven of the nine grantees that have completed the three-year funding opportunity to date financially committed or received another grant to sustain the efforts to improve the quality of PE. Financial contributions from the district or BOCES for the following school year ranged from \$2,500 to more than \$10,000 and were used to fund items such as: A PE coordinator position; renewal of software license; professional development opportunities; and committee work to create standards-based assessments. These contributions demonstrated how the participants could enhance and expand the Funding Opportunity to further meet their schools' needs.

Grantee Recommendations for Success

Respondents had additional recommendations for successfully expanding this Funding Opportunity to other schools and districts.

Invite parents to get involved. If parents and the broader community better understand the value of PE, they are more likely to demand it for the students on a long term basis. To facilitate this understanding, respondents recommended communicating with parents throughout the process. To start, several teachers introduced the PE curriculum to parents. Respondents also suggested sharing fitness and other data collected through the program with parents and the community, to demonstrate progress and accountability. Other ways teachers involved parents included:

- Creating a project or program where parents and family members could volunteer to help organize physical activity programs;
- Inviting parents when guest speakers are brought in to share healthy lifestyle information; and
- Creating an after-school physical activity program that allows parents to participate with their children and use the new PE equipment.

Obtain staff and administration support. Cultivating strong support from staff and administrators raises the profile of PE and increases the likelihood of sustainability. When teachers from other subjects learned about the new skills-based curriculum, they became excited for the PE teachers and students and placed a higher value on PE classes. Many respondents mentioned that teachers from other subjects appreciated the time PE allowed them to take care of administrative duties. In addition, they could tell when the PE class had a good workout because the students were better behaved and more focused in class. When statistics from fitness testing and data on reduced obesity among students were provided to administrators, they were more likely to provide resources for additional PE class time and teachers. Strong support from administrators was important for PE to become a priority on par with other subjects like reading and math.

Hire teachers with a formal PE degree. Respondents felt that recruiting and hiring qualified PE teachers was the key to the continuity and sustainability of the curriculum because they will be better equipped to comprehend the skills-based teaching units. New PE teachers should be fully briefed on the purpose of quality PE and should visit schools already implementing the updated PE standards to observe the curriculum being taught.

Maintain the grant coordinator position. This position is important for coordinating meetings, trainings, assessments and other common needs across schools and PE teachers in a district. This position could also take on the role of conducting SOFIT observations for a district, which was previously conducted by a technical assistance provider during the Funding Opportunity.

Invite new PE teachers to observe. Prior to attending training, it would be helpful for new PE teachers to observe classrooms of teachers implementing the new PE standards. These teachers would not necessarily be new hires, but could also be PE teachers from schools being brought into the initiative.

Develop mentor-mentee school relationships. For some schools, it could be helpful to pair schools with similar student demographics or locations. This relationship would allow for the school that has already implemented the new PE curriculum to share best practices specific to their population with the new school. This might be especially beneficial for schools with high populations of English as a Second Language or very rural schools.

Conduct pre-implementation workshops. Conducting a pre-implementation workshop helped to connect participants early and set expectations in terms of goals, objectives and work required for the Funding Opportunity.

Encourage collaboration among teachers. Districts implementing quality PE should prioritize collaboration among PE teachers including meetings (in person and virtual) and other ways to share best practices and innovations.

Use technology as a teaching tool. As described in previous sections, technology can be an important feedback tool for both PE teachers and their students. However, respondents stressed the importance of providing adequate training on how to use the technology is equally as important.

Take advantage of the planning and implementation process. The process offers many opportunities for professional development, team building, and most importantly, development of a curriculum tailored to district specifications. Specifically, the process provided an opportunity to learn the new standards as a team, decide instructional resources, create a standards-based curriculum, develop class activities, and use systems to assess and track students. One administrator made the PE work done by that district available as an online resource. Online sharing of processes and resources could be especially beneficial for teachers in rural areas.

Provide extra-duty pay/substitute coverage. It is important to compensate teachers for the extra work, outside of their normal responsibilities, required to participate in trainings and committee meetings. If trainings and/or meetings are scheduled during the school day a substitute needs to be provided.

Expect and prepare for resistance to change. Most people are naturally resistant to change. In order for teachers to be accepting of change, it is important that they are informed and have the opportunity to provide feedback. Communicating goals, expectations, and information about committee work and decisions made throughout the planning and implementation phase is critical to making positive change.



Photo by James Chance. Boulder, CO.

Concluding Summary

Three years is a short period of time to document program outcomes such as behavior and health changes. However, the Foundation's PE investments in Colorado are already showing signs of positive changes. Students are more active during existing PE classes and spending more time engaging in MVPA. In addition, teachers are also spending less time managing the classroom and more time providing actual PE instruction.

The new PE curricula, equipment, technology, training and professional development, created a higher level of quality in PE classes across the funded schools and districts. A higher level of professional development was further facilitated by collaborative networks of PE teachers that formed organically through the process of attending the Funding Opportunity meetings and trainings. These improvements worked together to raise the profile of PE among important stakeholders including fellow teachers and school administrators. In addition, data on student improvements increased support for PE among administrators, parents and community members. Most importantly, the new PE curricula led to more enthusiastic and physically fit students who place a higher value on PE because their classes are more varied, better organized and enhanced by modern technology.

These improvements in PE are a direct result of how the Funding Opportunity was structured and implemented. The extended timeline, step-by-step process of identifying needs in districts' PE programs, instructional resources, equipment, technology, trainings and meetings, contributed to the success of the program. The involvement of PE teachers in all of these steps, usually as a group from a given district, created ownership and facilitated ongoing collaboration. As a result, the teachers were more skilled in their teaching methods, leading to increased MVPA among students. The new equipment and technology purchased through the Funding Opportunity increased student interest. Technology allowed the teachers to track students' activity and fitness levels across time. Teachers used the information to interact with their students and demonstrate the value to stakeholders. Finally, all involved with the Funding Opportunity felt the grant coordinator position was essential to its success, and that the technical assistance provider was very important as well.

Interview respondents felt it was likely that the new PE curricula resulting from the Funding Opportunity would be sustained after the funding period, primarily because with an established foundation, the primary focus will shift to program maintenance. However some potential challenges to sustainability include:

- Training new PE teachers in the new PE curriculum and techniques;
- Maintaining and replacing equipment as it deteriorates over time;
- Upgrading technology as needed; and
- Continued cultivation of stakeholder support.

Some of the challenges of the initiative echo the positives. While there was great value in having PE teachers attend all trainings and meetings as a group from each district, it also pulled them away from their classes and created a challenge for administrators in finding substitutes for missed classes. While the long step-by-step process of the Funding Opportunity was seen as positive, it also could create heavy workloads and additional responsibilities for teachers that were not anticipated.

Recommendations

Based on both the successes and the challenges, ICF offers several recommendations for schools and districts to consider when improving the quality of PE.

- Incorporate a step-by-step process in which teachers and/or committee members identify needs; select instructional resources; develop curricula; create an equipment list; and identify professional development trainings. Prior to beginning the process, inform all teachers of the goals, requirements and expectations of the plan to improve the quality of PE. Continue to include a meeting/training at the beginning of the Funding Opportunity that provides an overview of the goals, requirements and expectations.
- Incorporate into the Funding Opportunity the opportunity for new participants to visit schools that have already implementing the new standards and curricula. This will allow the new participants to see what implementation looks like in practice. Consider matching new and experienced schools with similar sizes, demographics or location (e.g., rural or urban) in mentor-mentee relationships, so that lessons learned and skills can be shared with newly-funded schools and teachers.
- Continue requiring all PE teachers from a district to attend meetings and trainings as a group. To alleviate some of the time challenges, schedule training days on non-contact days when teachers are not expected in class (including weekends). To ensure attendance at these trainings on weekend or other times, consider providing compensation or incentives for teachers to attend.
- Make sure the selection of PE equipment occurs after the participants have completed the necessary training to make the most informed choices.
- Incorporate instruction on ways to include and communicate with parents, families and communities regarding the new PE standards. This can build support for the new PE curricula and lead to an increased likelihood of sustainability of improved PE after the Funding Opportunity.
- Establish a data collection protocol to standardize terminologies for school and teacher names and grade levels, and to ensure that schools have comparable data available across funding years.
- Ensure the data collection process includes a plan for validation and a quality assurance that is implemented during the data collection phase in order to achieve high response rates; adjustments for implausible values and outliers; and standardization in the data collection process.
- Provide templates or easily accessible web-based platforms for data collection that allow for the housing of data from various sources into one database from all funding years together, in order to facilitate data management and preparation for analysis. Utilize validation fields so that all data is submitted in a standardized format.



Photo by James Chance. Conifer, CO.



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