

Optimal Group Sizes for Specific Elementary PE Activities

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Abstract

This study developed from interest by the researcher regarding what group sizing offered the optimal experience for students in elementary PE. The researcher collected data from 425 students in grades kindergarten through fifth grade by observing, documenting, and performing oral surveys. The research involved introducing a variety of PE activities to elementary students while experimenting with different group sizes. The researcher documented the amount of moderate to vigorous physical activity (MVPA) and surveyed students on enjoyment, physical activity and safety. The results show optimal size groups for various activities.



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Action Research Proposal

Chapter One – The Introduction

For many of the 154,620 people who live in Oregon's second largest city, running is a way of life. So much so, the city has been nicknamed "Track Town USA." One needs only to go for a run down one of the many bike/running paths throughout the city to see why it has also been nicknamed "The Emerald City." Evergreen trees, community gardens, parks, and flower gardens are scattered throughout the city. The Willamette River snakes through the city and many buttes frame the skyline for a breathtaking view.

Of the city's two school districts, the largest, with 18,476 students is 72% Caucasian. Hispanic students make up the second largest population at a mere 6%. Asian/Pacific Islanders and American Indian students both represent 5% of the student population, leaving African-American students representing only 3% of the population. The remaining nine percent represent "other" or mixed demographics. These students are served by 24 elementary schools, 12 middle schools, and four high schools.

Of the 1,001 certified teachers serving these students, only 40 teach physical education (PE). There are 19 PE teachers serving the 24 elementary schools. Due to lower enrollments at some schools, four PE teachers each teach at two schools, while one school does not have a PE teacher.

The research site houses two elementary schools. One school is a neighborhood school with an enrollment of 222 students grades kindergarten through five. The other school is a Spanish Immersion school with an enrollment of 247 students grades 1 through 5. The schools share a gym, cafeteria, front office, library, computer lab,

principal, music teacher, and PE teacher. Students at both schools attend PE twice a week for 30 minutes sessions, with the exception of kindergarten, which has only one 30-minute session. The class sizes vary between both schools as well as within grade levels. The neighborhood school is broken down into nine classes while the alternative school is broken down into ten classes.

Neighborhood School

Alternative School

Grade Level	Number of Students	Grade Level	Number of Students
5	28	5	25
4/5 Blend	25	5	24
4	27	4	23
3	25	4	24
2	22	3	27
1/2 Blend	26	3	25
1	29	2	27
Kindergarten AM	20	2	25
Kindergarten PM	20	1	24
		1	23

The research site is in close proximity to the high school that most elementary students will later attend. The building sits in the center of the community it serves.

Students who attend the neighborhood school live in the immediate area and are bussed or walk or bike to school. The alternative school requires parents to provide transportation for their children, which results in many students coming from other

communities to attend the school. Many local businesses support both schools by providing fund-raising opportunities, grants, and volunteers.

Variables that affect the daily number of students who come to PE include absences, testing, illness while at school, teachers keeping students to make up work, academic support classes, and other class or school projects. There is no guarantee the researcher will have the same number of students attending PE each session.

The researcher is the research site's current PE teacher and has seven years of elementary PE teaching experience. This is her third year teaching at the research site. The researcher holds a B.S. in Physical Education and is currently working on an M.Ed in Administration. The researcher is a member of Oregon Alliance of Health, Physical Education, Recreation, and Dance (OAHPERD) and The Oregon Education Association (OEA). She attends the yearly OAHPERD conference to learn about new activities and stay up-to-date with current standards and oppositions. She also attends OEA workshops to enhance her teaching skills. The researcher is also the facilitator for the site's Positive Behavior Support (PBS) team.

The research will be conducted in the gym during PE classes. The research will be done across grade levels and during different activities. The researcher will have total control over the research set-up, but will not be able to influence the results. The researcher will be the sole implementer of the research activities. The researcher's role will include setting up, documenting, comparing data, teaching, trying out different group sizes, conducting surveys, and adjusting activities as needed. The researcher intends to answer the question: "What are the optimal group sizes for specific elementary PE activities?" The answer may be different in grade levels and for specific activities.

Action Research Proposal

Chapter Two - The Issue

Physical Education (PE) is intended to teach students the importance of physical activity and direct them toward a healthy lifestyle. During class, students participate in games, dancing, rhythmic and team building activities, team sports, and a variety of other activities. Some activities are individually based, but the majority requires students to pair up or get into groups/teams. Activities and games often require the groups/teams to be evenly matched as to provide balance, but different activities/games often require different amounts of students.

PE teachers have no control over the number of students in their class. The number of students depends on class size and varies daily. Throughout a school day, PE teachers will not see the same number of students at any given time, and when designing a lesson plan, the PE teacher has to take the variation into account. Even in doing so, the PE teacher cannot guarantee students will experience the game/activity, as it should be due to uncertainty regarding the number of students.

Certain sports and activities require a specific number of team/group members. For example, basketball requires two teams of five players to play the game. In a class of 34, only including ten students would not be an efficient use of PE time. On the other hand, a game of Kin Ball requires three teams of four. In a class of 12 with one student absent, the teams become unfair. The problem PE teachers face is determining the optimal group size for each specific activity, while ensuring all students are active most of the class time and students are having an enjoyable experience.

During the spring semester of the 2009-2010 school year, the researcher will study a variety of activities/games to determine the optimal number of students for each. The researcher will study small class sizes and large class sizes as well as different grade levels. The researcher will try different group/team sizes during each activity/game to ensure the optimal group/team size is found.

In 2005, Barroso's study of barriers in providing quality PE found large class sizes to be the second-ranked barrier. Fraser-Thomas and Beaudoin (2002) listed large class sizes as one of the "challenges" PE programs face. These articles discuss how large classes may not be optimal for PE grouping. Hastie (1998) followed a team of six players during a 30-lesson sport education season. The article discusses the selection of teams and why Hastie (1998) decided to divide the classes into 18 teams of six. Humphries and Ashy (2000) discuss modifying games and playing three-on-three. Grouping in PE can be a dilemma for teachers; so finding the optimal group size for specific activities/games in an elementary PE setting would take that burden off the individual PE teacher and set the class up for success.

The researcher will primarily use observation and documentation. The researcher will use sports standards to establish a base for group size. The researcher will use surveys to examine the result of games/activities trial team/group sizes. The researcher will also use injury reports during the trial activity/game to determine if a group is too large.

Literature Review

Literature shows that PE class sizes and the types of games/activities affect the optimal group sizes for PE. In a questionnaire conducted by Barroso, McCulleum-

Gomez, and Hoelscher (2005), PE Specialists in Texas listed large class sizes as a barrier to quality PE. Fraser-Thomas and Beaudoin (2002) followed two PE teachers implementing a new PE curriculum and discovered “class sizes ranging from 23 to 36 students” (p. 255). They cited large class sizes as providing many challenges for PE programs. Morgan and Hansen (2008) aimed a study at perceptions of the impact of barriers to teaching PE on quality PE programs. The study listed class size as one of the institutional, or uncontrollable, barriers to a quality PE program. In finding an optimal group size for specific activities/games, PE teachers will be able to plan ahead for large class sizes and be able to keep all students active.

Jones and Ward (1998) suggest instead of taking a class of 30 and playing volleyball on one court, divide the court into four smaller courts. “Eight teams of three to four players can then compete at the same time, allowing for maximum participations by all students” (p. 40).

Research shows that smaller teams can keep more students active. One of the goals for PE teachers is to keep all students active during the majority of the class. Another goal is to keep the activity level between moderate to vigorous. These goals are taken into consideration when determining optimal group sizes. In a study on sport-based PE lessons, Arnett (2001) wanted to see if “using a modified game structure could: 1) ensure 50% of the class time was of moderate to vigorous intensity; 2) ensure all ability levels participate actively and 3) provide enjoyment” (p.158). During Arnett’s 2001 study, the following interventions and groupings were used to teach soccer:

The first lessons included a one on zero control drill and a two on zero control and passing drill followed by a two on one keep away drill. The focus of the drills was

offensive skills, both on-and away-from-the-ball. In the second lesson students started with a one on zero control drill followed by a one on one keep away drill in restricted space emphasizing ball protection. Following the one on one drill, students moved into a two on one, then a two on two and finally a three on two keep away drill. During the two on two and three on two keep away drills the emphasis was on offense (on-and away-from-the-ball) and defense (on and away-from-the-ball). All lessons ended with modified three on three games. The games were ten and three min for the first and second lessons respectively. Drills and games never included more than three per side and all students were constantly involved. (p. 160)

Results of the interventions Arnett used in his 2001 study showed “Over half of the sport-based PE class time included MVPA (61%)” (p. 161). MVPA represents moderate to vigorous physical activity. “In a 20 min lesson all students have the opportunity to practice on-the-ball and off-the-ball soccer skills approximately 175 times” (p. 161). “The sports-based PE lessons had four games occurring simultaneously and, therefore, allowing more OTR...” (p. 162). OTR represents “opportunities to respond.” So by allocating time for drills and modifying games into smaller teams, sports-based PE lessons can result in more activity by more students. When the participants in Arnett’s 2001 study were asked to describe their perception toward the amount of time they were able to participate, they answered 100%. Another finding showed that “In the three on three games, players of all ability backgrounds were able to perform on-the-ball and away-from-the-ball skills” (p. 162).

There are so many games and activities that are available to the PE teacher. Each game and activity has a standard number of team or group members. One game PE teachers teach is Tchoukball, pronounced “chukeball.” It is generally played indoors on a basketball court using seven players or more per team or is played outside on a large field using nine players per team. Either way the game “fully engages students in active participation” (Eberly, Yohn and Girardin, 2005, p. 23). Eberly, Yohn, and Girardin (2005) give the following description of Tchoukball

Tchoukball is an exciting game where players throw a ball onto a frame in an effort to make the ball fling back and land on the field of play before a defender can catch it. Players of tchoukball run, jump, throw, and catch in an invigorating and free-flowing manner. (p.23) The tchoukball dynamic is that all players are constantly involved in the game, either sustaining an offensive phase or anticipating a defense action. Players have a feeling of contributing to the team effort and that they played an important role in the game. In tchoukball all players are needed to play and participate either as scorers or defenders of the floor from the ball. It is not possible to be an inactive player. (p. 25)

Touch Rugby, often called Touch, is another game played in PE class that keeps all students active. Mathesius and Strand (1994) note Touch has many advantages:

It can adapt to large classes by increasing the number of players per side or using multiple fields. The entire class is involved in game play. The whole class starts on an equal footing due to the introduction of new skills and strategies. The sport has an aerobic fitness component. (p. 55)

Although the number of team members can be increased to accommodate large classes, Mathesius and Strand (1994) suggest, “teams should be limited to eleven players and the field size increased, especially width” (p. 55). “Teams with six players progress quicker than teams with seven” (p. 59).

Many PE teachers use Sport Education lessons. In a study on Sport Education, Hastie (1998) followed a team of six, known as the Eagles, through a season of Ultimate Frisbee, which lasted 30 lessons. “During the skill development phase (5 lessons), the students were given whole class, direct instruction on three major grips and throws, as well as the rules of the game” (p. 370). The goal of the season was to see increasing student participation in game play and refereeing commitments with a decrease in direct instruction from the teacher. Students from the Eagles were interviewed by Hastie (1998) at the end of the season to get their perspective on four themes: improvement, team consistency, sense of usefulness, and perceptions of fairness. The results were as follows:

All players felt they had improved during the season, irrespective of the student’s skill rating before the season commenced. Continuously playing over an extended period was a factor identified by at least three of the Eagles as a significant component of their improvement. Every player interviewed was strongly in favor of being on the same team for the entire season. The persisting team made the unit “fun” [4 players] and, for the lower skilled players, “fun – because they helped me.” This notion of helping was seen as key in developing skill. Being on the same team for the whole season meant that the players seemed to invest in all players becoming more competent. Every player on the Eagles team believed that he or she was a useful part of the team. (p. 375) The general team opinion about

whether everyone was given an equal chance is best summarized by a medium-skilled player who commented “I think it was an equal chance for everyone. I don’t think that anyone on my team hogged the ball.” The girls also felt they were not left out. (p. 376)

When selecting games and activities to play in PE, teachers often consider games that are similar. “Tennis, volleyball, and badminton all use a net and require ball-striking skills. Invasion games such as basketball, hockey, field hockey, and soccer all involve dribbling against a defender and defending against an opponents dribble” (Humphries and Ashy, 2000, p. 13). These games can all be modified to small-sided games, such as three-on-three. Humphries and Ashy (2000) suggest “you can fit several small-sided games into the same space as one regulation game” (p. 13). During their research, they once saw “a physical education major successfully run six basketball games for eighth-graders on one court with six baskets” (p.13). This allows students more time with the ball and is easier for less-skilled and younger players to understand what they are supposed to do.

Jones and Ward (1998) discuss what PE teachers should consider when organizing teams in PE classes. “This number will depend on the sport being played, the number of students in class, and the amount of space and equipment available” (p. 40). Jones and Ward (1998) suggest “Students in an 11-versus-11 soccer game will not make contact with the ball or play in as many defensive and offensive roles as they would in a five-versus-five game” (p. 40). “Students can also officiate the games” (p. 41). Warm-ups should be done before any sport/activity and can be done as a whole class.

PE teachers have an ample supply of games that can be played in class. Sometimes games are used to integrate other parts of the academic curriculum. Ninham (2002) gives examples of three multicultural games to implement into PE programs. “Long Ball is played by two teams of equal numbers” (p. 12). This game would accommodate any class size. Kick Ball Relay is “done either individually, with a partner, or in a small group” (p.13). This game would accommodate large class sizes as well as several small groups. Scissors Broad Jump is an individual activity that could be done as whole group or with students partnered up.

Because of large class sizes and lack of equipment, many PE teachers turn to setting up stations with different activities in order to engage all students in activity. Humphries and Ashy (2000) discuss the use of stations as a way to keep all students active simultaneously.

Stations are the teacher’s friend for many reasons. If you don’t have enough equipment for everyone to do the same thing at once, stations allow students to do different activities or a single activity in parts and still have plenty of practice time. Furthermore, it’s easier to observe students if the class is divided into stations. (p. 14)

PE teachers can adjust the number of stations and the number of students at each according to the class size.

Assessment has become an important part of PE programs. “Assessment is a critical aspect of ensuring that children progress through the developmental process,” Olrich states in her 2002 article “Assessing Fundamental Motor Skills in the Elementary

School Setting” (p. 26). Time usually constrains the amount of assessing. Olrich (2002) gives some ideas for assessment using peer assessments. She says:

Although instructors should never use peer assessment to assign grades, they can use peer-assessment data to identify individual student difficulties and lesson deficiencies. Further, the students conducting the assessment benefit tremendously by reinforcing the significant elements of skills. (p. 28)

Assessment can also be done as whole group or one-on-one with the teacher.



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Action Research Proposal

Chapter Three - The Goal of the Action Research Project

The point of this research paper is to discover the optimal group sizes in elementary PE for specific activities. Although the PE teacher cannot control class size, finding the optimal group sizes for specific activities will help PE teachers ensure all students remain active the majority of the time. It will also make it easier for PE teachers when planning lessons.

Different sports/activities require different numbers of team/group members. Sometimes the standard number of team/group members does not transfer well to PE class. Often times the standard number only allows a handful of students to be active while the remainder of the class sits on the sideline. Keeping all students active not only gives them the required amount of daily activity, but also reduces behavior issues. Smaller group sizes may elicit more activity, more enjoyment, and more success per student (Arnett, 2001).

The optimal group size will depend on the grade level, class size, and specific sport/activity. The class size may affect either the team/group, the number of teams/groups, or possibly both. The researcher will start with the standard team/group size and adjust for class size. The researcher will also modify the standard number of teams/groups needed in the game/activity based on class size.

Different grade levels will typically have different skill levels. The optimal group size may vary among grade levels to ensure all students are active and have sufficient participation time. The sport/activity standard group size will also be taken into account

when trying to find the optimal group size for elementary PE class. It may be adjusted if it does not engage enough students.

The optimal group size needs to keep all students moderately or vigorously active for 66% of the class time (20 minutes), give all students a chance to participate and feel a part of a team/group, and be relevant to the actual standard for the specific game/activity as much as possible. Safety will also be a consideration when determining the optimal group size. The optimal group size will relate to a specific game/activity and may not always be the same.

Instruments for Gathering Data

The researcher will use observation and documentation for determining the optimal group size. PE classes will be observed performing various games and activities. The researcher will document the grade level, standards for the game/activity, and the various group sizes. The researcher will note the MVPA ratio through observation by using a stopwatch to time actual activity.

Afterwards, the researcher will give a survey to students involved in the game/activities to gather their personal feelings about the experience. Students will be questioned about their feelings toward participation, feeling a part of a team, activity level, and enjoyment. The surveys may ask students to compare their experiences from one group size to another in the same game/activity to confirm the researcher's results from documentation. Injuries will be noted and the activity will be adjusted as needed to prevent further injuries.

The researcher will spend the spring semester of the 2009 – 2010 school year to perform the research. The researcher's subjects will be three fifth grade classes, one

fourth/fifth grade blended class, three fourth grade classes, three third grade classes, three second grade classes, one first/second grade blended class, three first grade classes, and two kindergarten classes. Most of the time, grade levels will be participating in the same activities with modifications, but some activities will be grade level specific.



Action Research Proposal

Chapter Four – Action Plan

The researcher will be answering the question “What are the optimal group sizes for specific elementary PE activities?” Optimal group sizes will provide opportunities for all students to participate, be moderately to vigorously active for 66% of the class, and enjoy the experience. Laurson, Brown, Cullen, and Dennis (2008) suggest “the amount of time children engage in physical activity is easily determined, monitoring the activity intensity is more challenging” (p. 85).

The Laurson, Brown, Cullen, and Dennis (2008) study found that “team games provided the highest percentage of moderate-to vigorous physical activity (MVPA) during PE Classes, followed by individual activities, individual games, and movement activities” (p. 85). The study also found that boys attained higher mean heart rate (MHR) during team activities, while girls achieved higher MHR during individual activities. The final results for the study concluded that fitness activities elicited the highest MHR of all activity types and showed more consistency than team or individual games and did not vary between genders.

*Possible Solutions**Three-On-Three*

Kern and Calleja (2008) suggest an ideal physical education lesson would engage students in active practice for at least 50 percent of the available class time and that at least half of that time should include MVPA. During their study, they found that as the number of players per team increased, the involvement rate dropped. An interesting phenomenon was revealed as they looked closely at their data. Regardless the number of

students per team, the game essentially evolved into a game of three-on-three. Although there may have been 12 students on each team, the majority of play was performed by only three of the students.

Kern and Calleja (2008) also addressed the “sacredness” of the game that some PE teachers have when teaching games/activities. “Basketball is not really basketball if there are not ten players on the court. Students can’t learn the “real game” of softball unless there are at least nine on a team” (p. 32). Kern and Calleja (2008) suggest teachers need to believe that it is not only acceptable, but also beneficial to work in a modified game. In doing so, one ensures that all students are maximally involved.

Following this study, optimal groups for sports may result in modifying all sports games to three-on-three. This would allow for more student involvement and a higher level of physical activity. Playing three-on-three would allow for various games to occur simultaneously. While three-on-three may be an optimal group size for many activities, the researcher does not want to limit class involvement solely to small numbers. Therefore the researcher may use this grouping as part of her research but will also continue the search for other options

Whole Class

Erwin and Bachtel (2007) point out that the National Association for Sport and Physical Education (NASPE) suggest appropriate physical education practice involves all students participating actively. They offer TAG (Teaching Active Games) as a whole group activity. Their article gives descriptions of eleven different TAG for the holidays. The games can be used as a warm-up or for the entire class time. The games can be

modified according to class size and provides active participation for every student simultaneously.

In accordance with Erwin and Bachtel (2008), finding games and activities that engage the class as a whole group ensures all students are participating and are active during the entire class. This would suggest at times the optimal group size would be whole class. Therefore the researcher accepts the whole class grouping strategy as a possible solution in her research.

Modified Games

Nutter (2003) discusses how games, specifically Four Square, can be modified to engage more students when the class size increases. Four Square needs at least four students to play. If space is available, there can be four to six Four Square games going at a time. There could also be five students at each square, with one waiting to enter the game. Four Square is a game that moves fairly fast, so the waiting student would not be inactive long.

Nutter (2003) offers modifications for Four Square that include Team Four Square, Extreme Four Square, Four Square Keep Away, and Six Square. Each game modifies traditional Four Square by adding players, changing the size of the court, or altering the goal of the game. Nutter's (2003) recommendations for Four Square modification can be carried into many other games and activities. The researcher accepts the modifying standard group/team strategy in relation to class sizes as a possible solution to her research.

Summary

The researcher has reviewed the aforementioned articles and will be using each idea during the research. Finding an optimal group size for elementary PE is not going to be a one-size-fits-all research project. The group size will be specific to the activity or game. The optimal group size will also adjust with class size.

Action Plan

The researcher will be determining the optimal elementary PE group sizes for specific activities. The activities will include various sports, TAG, and games. The research will be conducted with two school populations and grades kindergarten through fifth.

The first step will be to get permission from the district, principal, and parents to perform the research in the researcher's PE classes. The research will be done during the spring semester of the 2009 – 2010 school year.

The researcher will create a list of common games/activities in PE. The researcher will try the game/activity with different classes using various group sizes and modifications. During this time, the researcher will observe and document the number of students who are participating during the activity, student level of activity, and student safety. The researcher will then use those notes and observations and conclude whether the activity engaged all students in MVPA for 67% of the class (20 minutes).

The researcher will also conduct oral surveys with students after each activity to get student opinion on enjoyment, participation level, and safety. These results will be combined with the MVPA results to determine the optimal group sizes.

Action Research Project

Chapter Five - Results

During a 13-week period, the researcher observed 21 different elementary physical education activities in grades kindergarten (K) through 5. The goal of the research was to determine optimal group sizes for specific elementary PE activities. During each 30-minute observation, the researcher documented student participation, student safety, different group sizes, and the level of student physical activity. Students were given oral surveys to reflect student enjoyment, student perception of activity level, and student perception of safety during the activity.

The biggest changes that occurred during the research were the class sizes. Events that affected the class size variances were academic support classes overlapping PE classes, teachers keeping students to make-up/finish class work, Oregon Battle of the Books (OBOB) competitions, field trips, sicknesses, absences, injuries, arriving late to school, new enrollments, withdrawn students, and discipline. As shown in Table 1, class enrollment does not always reflect the actual class attendance. The first number in each column of Table 1 represents each class's enrollment and the second number represents the actual class attendance the day of the observation.

Table 1**Class Enrollment v. Class Attendance**

Kam	20/ 19	20/ 19	20/ 19		18/ 15		18/ 18		18/ 18		17/ 17	17/ 17				
Kpm	20/ 16	20/ 20	20/ 17		20/ 20		20/ 20		20/ 17		20/ 17	20/ 20				
1 st	29/ 29	29/ 26	29/ 27	29/ 29	29/ 27	29/ 29	29/ 27	29/ 25	29/ 27	29/ 26	29/ 27	29/ 19	29/ 26	29/ 28	29/ 25	
1/2 Blend	26/ 24	26/ 24	26/ 25	25/ 24	Field Trip	25/ 24	25/ 23	25/ 23	26/ 25	26/ 21	26/ 21	27/ 26	27/ 26	27/ 25	27/ 24	28/ 26

2 nd	22/	22/	21/	21/	22/	21/	21/	21/	20/	20/	20/	21/	21/	22/	22/	21/
	19	17	18	18	19	17	21	20	18	20	16	21	15	20	19	18
3 rd	25/	25/	25/	24/	23/	23/	23/	23/	23/	23/	23/	23/	23/	23/	23/	23/
	23	23	21	22	20	21	20	23	22	20	21	11	17	21	23	
4 th	27/	27/	27/	27/	27/	27/	27/	27/	27/	27/	27/	27/	27/	25/	25/	24/
	26	27	25	25	27	24	26	25	22	27	25	9	22	23	20	
4/5	25/	25/	25/	25/	25/	24/	24/	24/	24/	24/	24/	24/	25/	25/	25/	25/
Blend	24	23	22	25	23	23	23	22	23	24	24	19	22	25	24	
5 th	28/	28/	28/	28/	28/	28/	28/	28/	28/	28/	28/	28/	28/	28/	28/	28/
	26	21	27	25	26	27	27	25	25	25	27	26	25	26	27	
1 st	23/	23/	23/	23/	23/	23/	23/	23/	23/	23/	23/	23/	23/	23/	23/	23/
	23	23	22	22	23	21	20	23	23	22	23	23	21	23	23	21
1 st	24/	24/	24/	24/	24/	24/	24/	24/	25/	25/	25/	25/	25/	25/	25/	25/
	23	21	23	22	22	23	22	22	24	25	25	25	21	24	25	25
2 nd	25/	25/	25/	25/	25/	25/	25/	25/	24/	24/	24/	24/	24/	24/	24/	24/
	23	23	22	22	24	22	25	23	24	14	15	20	16	20	23	24
2 nd	27/	27/	27/	27/	27/	27/	27/	27/	27/	27/	27/	27/	27/	27/	27/	27/
	25	27	24	25	27	27	25	27	27	22	26	25	23	26	27	26
3 rd	27/	27/	27/	27/	27/	27/	27/	27/	27/	27/	27/	27/	27/	27/	27/	27/
	24	24	25	24	25	26	27	24	27	27	24	25	25	26	26	
3 rd	25/	25/	25/	25/	25/	25/	25/	25/	25/	25/	25/	25/	25/	25/	25/	25/
	22	25	24	22	22	23	25	24	25	25	22	25	25	24	25	
4 th	24/	24/	24/	24/	24/	24/	24/	24/	24/	24/	24/	24/	24/	24/	24/	24/
	23	23	22	23	23	23	24	24	22	24	22	24	24	21	24	
4 th	23/	23/	23/	23/	23/	23/	23/	23/	23/	23/	22/	23/	22/	22/	22/	22/
	21	22	20	23	23	21	23	22	23	21	20	21	21	20	21	
5 th	24/	24/	24/	24/	24/	24/	24/	24/	24/	24/	24/	24/	24/	24/	24/	24/
	21	22	18	19	23	22	23	22	21	24	18	23	23	22	24	
5 th	25/	25/	25/	25/	25/	25/	25/	25/	25/	25/	25/	25/	25/	25/	25/	25/
	23	23	25	21	25	23	24	25	23	24	22	25	25	23	24	

Table 2 list the 21 different activities observed by the researcher. (See Appendix for descriptions of all activities.) Some activities were observed in all grades, K through 5. Some activities were broken into grade levels K through 2 and then grades 3 through 5.

Table 2 designates the grade level in which the activity was observed with an “X”.

Table 2

List of Activities Observed

<i>Activity</i>	<i>K – 2</i>	<i>3 - 5</i>
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Relays	X	X
TAG	X	X
Hockey	X	X
Straddle Ball & Tony Chestnut	X	
Basketball		X
Skating Pad Practice		X
Clean Your Room & Chicken Dance	X	
Skating		X
Switcheroo	X	
Corn Toss	X	
Dancing with Ribbons	X	
Stations (3)	X	X
Pacer Test	X	X
Volleyball Game	X	X
Crab Soccer	X	X
Giant 4-Square	X	X
Soccer Skill Game	X	X
4 of a Kind	X	X
Crazy Cones	X	X
Striking with a Paddle	X	X
Air Raid	X	X

Physical Activity Assessment

During observation and documentation, all 21 activities were observed using a variety of group sizes to determine which group size would provide the highest moderate to vigorous physical activity (MVPA). To measure MVPA the researcher observed student body movement. If students were standing still, it was documented as NPA (no

physical activity). If students' body movement was slight (arm movement only, upper torso movement only, walking, bending) it was documented as LPA (low physical activity). If students' body movement was medium (jogging, skipping, galloping, whole body movement, dancing) it was documented as MPA (moderate physical activity). If students' body movement was high (running, sprinting, fast-whole body movement, fast dancing) it was documented as VPA (vigorous physical activity). Each minute of the 30-minute class was recorded as a tally mark under the appropriate level of activity. The different group sizes were also recorded. In order to be considered an optimal class size, students would remain moderately to vigorously active for 67% of the class time (20 minutes). Arnett (2001) and Jennings-Aburto et al. (2009) stated students should spend 33-50% of PE in MVPA but the researcher felt more than half the class time should be spent in MVPA. Tables 3.1 through 3.21 represent the amount of physical activity per group size for each specific activity as well as the total MVPA for the each group size.

Table 3.1**Relay**

<i>Group Size</i>	<i>NPA</i>	<i>LPA</i>	<i>MPA</i>	<i>VPA</i>	<i>Total MVPA</i>
3 (6 groups)	5	3	17	5	22
4 (6 groups)	5	3	18	4	22
5 (6 groups)	5	7	15	3	18

Table 3.2**TAG**

<i>Group Size</i>	<i>NPA</i>	<i>LPA</i>	<i>MPA</i>	<i>VPA</i>	<i>Total MVPA</i>
Whole Group	3	1	20	6	26

(3 – 5)					
Whole Group	6	1	19	4	23
(K – 2)					

Table 3.3**Hockey**

<i>Group Size</i>	<i>NPA</i>	<i>LPA</i>	<i>MPA</i>	<i>VPA</i>	<i>Total MVPA</i>
3 on 3 (Floor 3 - 5)	14	11	5	0	5
2 on 2 (Floor 3 - 5)	5	12	13	0	13
1 on 1 (Scooter 1-5)	3	3	18	6	24
2 on 2 (Scooter 1-5)	3	2	18	7	25
2 on 2 (Scooter K)	7	16	7	0	7

Table 3.4**Straddle Ball & Tony Chestnut**

<i>Group Size</i>	<i>NPA</i>	<i>LPA</i>	<i>MPA</i>	<i>VPA</i>	<i>Total MVPA</i>
8 (2 teams) & Whole Group	3	18	9	0	9
9 (2 teams) & Whole Group	3	18	9	0	9
11 (2 teams) & Whole Group	3	21	6	0	6
12 (2 teams) &	3	23	4	0	4

Whole Group					
14 (2 teams) &	3	23	4	0	4
Whole Group					
15 (2 teams) &	3	23	4	0	4
Whole Group					

Table 3.5**Basketball**

<i>Group Size</i>	<i>NPA</i>	<i>LPA</i>	<i>MPA</i>	<i>VPA</i>	<i>Total MVPA</i>
3 on 3 (7 teams)	6	4	15	5	20
3 on 3 (8 teams)	7	8	13	2	15

Table 3.6**Skating Pad Practice**

<i>Group Size</i>	<i>NPA</i>	<i>LPA</i>	<i>MPA</i>	<i>VPA</i>	<i>Total MVPA</i>
Whole Group	4	16	8	2	10

Table 3.7**Clean Your Room & Chicken Dance**

<i>Group Size</i>	<i>NPA</i>	<i>LPA</i>	<i>MPA</i>	<i>VPA</i>	<i>Total MVPA</i>
4 (4 teams) & Whole Group	4	2	15	9	24
6 (4 teams) & Whole Group	4	4	19	3	22
5 (4 teams) & Whole Group	4	2	18	6	24

7 (4 teams) & Whole Group	4	6	18	2	20
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Table 3.8**Skating**

<i>Group Size</i>	<i>NPA</i>	<i>LPA</i>	<i>MPA</i>	<i>VPA</i>	<i>Total MVPA</i>
Whole Group	1	4	19	6	25

Table 3.9**Switcheroo**

<i>Group Size</i>	<i>NPA</i>	<i>LPA</i>	<i>MPA</i>	<i>VPA</i>	<i>Total MVPA</i>
5	3	5	20	2	22
6	3	3	20	4	24
7	3	3	13	7	20

Table 3.10**Corn Toss**

<i>Group Size</i>	<i>NPA</i>	<i>LPA</i>	<i>MPA</i>	<i>VPA</i>	<i>Total MVPA</i>
2	4	13	13	0	13
3	4	17	9	0	9

Table 3.11**Ribbon Dancing**

<i>Group Size</i>	<i>NPA</i>	<i>LPA</i>	<i>MPA</i>	<i>VPA</i>	<i>Total MVPA</i>
Whole Group	3	17	10	0	10

Table 3.12**Stations**

<i>Group Size</i>	<i>NPA</i>	<i>LPA</i>	<i>MPA</i>	<i>VPA</i>	<i>Total MVPA</i>
4 (4groups)	3	4	20	3	23
5 (4 groups)	3	6	16	5	21
6 (4 groups)	3	7	16	4	20
7 (4 groups)	3	6	17	3	20
3 (6 groups)	4	2	22	2	24
4 (6 groups)	4	3	21	2	23
5 (6 groups)	4	6	19	1	20

Table 3.13**Pacer Test**

<i>Group Size</i>	<i>NPA</i>	<i>LPA</i>	<i>MPA</i>	<i>VPA</i>	<i>Total MVPA</i>
Individual (3 – 5)	17	3	6	4	10
Individual (K – 2)	22	3	3	2	5

Table 3.14**Volleyball**

<i>Group Size</i>	<i>NPA</i>	<i>LPA</i>	<i>MPA</i>	<i>VPA</i>	<i>Total MVPA</i>
4 (2 teams)	13	7	11	0	11
5 (2 teams)	13	9	8	0	8
6 (2 teams)	13	10	7	0	7
7 (2 teams)	15	10	5	0	5
5 (4 teams)	5	17	8	0	8
6 (4 teams)	5	19	6	0	6

7 (4 teams)	6	19	5	0	5
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Table 3.15**Air Raid**

<i>Group Size</i>	<i>NPA</i>	<i>LPA</i>	<i>MPA</i>	<i>VPA</i>	<i>Total MVPA</i>
Whole Group	3	4	19	4	23

Table 3.16**Crab Soccer**

<i>Group Size</i>	<i>NPA</i>	<i>LPA</i>	<i>MPA</i>	<i>VPA</i>	<i>Total MVPA</i>
4 (4 teams)	3	5	17	5	22
5 (4 teams)	3	7	17	3	20
6 (4 teams)	3	10	15	2	17
7 (4 teams)	3	12	14	1	15

Table 3.17**Giant 4 –Square**

<i>Group Size</i>	<i>NPA</i>	<i>LPA</i>	<i>MPA</i>	<i>VPA</i>	<i>Total MVPA</i>
2 (4 teams)	3	2	16	9	25
3 (4 teams)	3	2	18	7	25
4 (4 teams)	3	2	18	7	25
5 (4 teams)	3	5	17	5	22
6 (4 teams)	3	5	18	4	22
7 (4 teams)	4	8	17	1	18

Table 3.18**Soccer Skill Game**

<i>Group Size</i>	<i>NPA</i>	<i>LPA</i>	<i>MPA</i>	<i>VPA</i>	<i>Total MVPA</i>
10 (2 teams)	4	10	13	3	16
11 (2 teams)	4	9	14	3	17
12 (2 teams)	5	9	13	3	16
13 (2 teams)	5	12	11	2	13
14 (2 teams)	6	12	10	2	12

Table 3.19**4 of a Kind**

<i>Group Size</i>	<i>NPA</i>	<i>LPA</i>	<i>MPA</i>	<i>VPA</i>	<i>Total MVPA</i>
2	3	4	16	7	23
3	3	7	14	6	20

Table 3.20**Crazy Cones**

<i>Group Size</i>	<i>NPA</i>	<i>LPA</i>	<i>MPA</i>	<i>VPA</i>	<i>Total MVPA</i>
10 (2 teams)	3	5	18	4	22
11 (2 teams)	3	5	19	3	22
12 (2 teams)	3	5	19	3	22
13 (2 teams)	3	5	19	3	22
14 (2 teams)	3	5	20	2	22

Table 3.21**Striking with a paddle**

<i>Group Size</i>	<i>NPA</i>	<i>LPA</i>	<i>MPA</i>	<i>VPA</i>	<i>Total MVPA</i>
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Whole Group & Pairs	3	7	20	0	20
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Each observation was of a 30-minute class. Most activities took two to five minutes to explain. Those minutes are represented in the NPA column. Students are required to line up at the end of class. So one to two minutes were allocated to the LPA column for lining up. The remainder of the documented time was observed during the activity. Fourteen of the 21 activities provided students 20 minutes or more MVPA. Of those 14 activities, four provided more MVPA when group sizes were changed. Relays provided more MVPA when less than four students were put in a group. Floor hockey provided minimal MVPA, but when the activity was changed to scooter hockey, MVPA increased by 10 minutes. Three-on-three basketball provided 20 minutes of MVPA when there were seven teams, but lost five minutes when adding one more team. Crab Soccer and Giant Four Square demonstrated how increasing group sizes while keeping the same number of teams decreases total MVPA. Whole group activities more often than not provided opportunities for high levels of MVPA while including all students. Team sports provided low levels of MVPA because teams or individuals rotated out and were not active for significant amounts of time. Games that require groups larger than seven decrease MVPA below the 20-minute level. Stations provide high levels of MVPA when there are four or more stations. The more stations offered, the smaller the group and higher the MVPA.

Most activities provided opportunities for all students to participate with the exception of basketball, volleyball, and some sections of stations. Basketball and volleyball required students to sit out and wait for a turn when their team was not

playing. When stations were divided into four groups, some stations lacked enough equipment and students were required to take turns.

Safety

During the observations, student safety was also observed to ensure the group sizing was safe for all participants. Table 4 lists the number of injuries and which group sizing the injuries occurred. It also lists the group sizes that had no injuries.

Table 4

Safety

<i>Activity</i>	<i>Number of Injuries</i>	<i>Group Sizes With Injuries</i>	<i>Group Sizes Without Injuries</i>
Relays	1	5	3, 4, 5
TAG	6	Whole Group 23, 27, 25, 24,	Whole Group 22, 23, 21, 27, 24, 26, 18
Hockey	Floor – 13 Scooter - 3	3-on-3 2-on-2 2-on-2	N/A 1-on-1 2-on-2
Straddle Ball & Tony Chestnut Basketball	1 0 4	11 N/A 3-on-3 (8 teams)	8, 9, 11, 12, 14, 15 Whole Group 3-on-3 (7 teams)
Pad Practice	0	N/A	Whole Group
Clean Your Room & Chicken Dance	2 0	7 N/A	4, 5, 6 Whole Group
Skating (3 days)	6	Whole Group 25, 27	Whole Group 22, 24, 23
Switcheroo	3	7	5, 6
Corn Toss	3	3	2

Dancing with Ribbons	0	N/A	Whole Group
Stations (3)	0	N/A	4, 5, 6, 7
Pacer Test	0	N/A	Individual
Volleyball Game	0	N/A	4, 5, 6, 7
Crab Soccer	2	6, 7	4, 5
Giant 4-Square	2	7	2, 3, 4, 5, 6
Soccer Skill Game	3	13, 14	10, 11, 12
4 of a Kind	0	N/A	2, 3
Crazy Cones	3	11, 14	10, 12
Striking with a Paddle	0	N/A	Whole Group & 2
Air Raid	0	N/A	Whole Group

During the research, floor hockey was changed to scooter hockey due to a high number of injuries to the face and head area. The previous table shows that most injuries occurred in the higher group sizes. Next to hockey, whole group activities such as TAG and Skating had the highest number of injuries. These injuries occurred in the larger class sizes. According to the research, creating smaller groups decreases injuries. For whole group activities, smaller class sizes decrease the number of injuries.

Oral Surveys

The third method of data collection was oral surveys to the students. After every activity, students were asked the following questions: (1) Did you enjoy this activity? (2) Did you feel your activity level was low, medium, or high? (3) Did you feel this was a safe activity? Table 5 represents the students' answers. "Y" represents a yes answer while "N" represents a no answer. For activity level, "L" represents low, "M" represents medium, and "H" represents high.

Table 5**Student Oral Survey Answers**

<i>Activity</i>	<i>Enjoyment</i>	<i>Activity Level</i>	<i>Safety</i>
Relays	Y = 332 N = 99	L = 26 M = 46 H = 358	Y = 400 N = 30
TAG	Y = 378 N = 19	L = 30 M = 71 H = 296	Y = 377 N = 20
Hockey	(Floor) Y = 27 N = 13 (Scooter) Y = 294 N = 96	(Floor) L = 1 M = 22 H = 17 (Scooter) L = 50 M = 129 H = 211	(Floor) Y = 9 N = 31 (Scooter) Y = 224 N = 166
Straddle Ball & Straddle Ball	Y = 178 N = 33	L = 35 M = 30 H = 146	Y = 203 N = 8
Basketball	Y = 130 N = 101	L = 73 M = 64 H = 94	Y = 186 N = 45
Pad Practice	Y = 202 N = 35	L = 45 M = 67 H = 125	Y = 228 N = 9
Clean Your Room & Chicken Dance	Y = 131 N = 13	L = 14 M = 54 H = 76	Y = 133 N = 11
Skating	Y = 206	L = 2	Y = 196

	N = 36	M = 9	N = 46
		L = 231	
Switcheroo	Y = 184	L = 0	Y = 193
	N = 12	M = 6	N = 3
		H = 190	
Corn Toss	Y = 157	L = 3	Y = 151
	N = 9	M = 67	N = 15
		H = 96	
Dancing with Ribbons	Y = 83	L = 7	Y = 95
	N = 12	M = 63	N = 0
		H = 25	
Stations (3)	Y = 427	L = 0	Y = 401
	N = 9	M = 14	N = 35
		H = 422	
Pacer Test	Y = 338	L = 0	Y = 420
	N = 84	M = 78	N = 2
		H = 344	
Volleyball Game	Y = 296	L = 237	Y = 383
	N = 94	M = 88	N = 7
		H = 65	
Crab Soccer	Y = 354	L = 0	Y = 401
	N = 63	M = 23	N = 16
		H = 394	
Giant 4-Square	Y = 353	L = 0	Y = 349
	N = 5	M = 41	N = 9
		H = 317	
Soccer Skill Game	Y = 183	L = 8	Y = 79
	N = 190	M = 261	N = 294
		H = 104	
4 of a Kind	Y = 297	L = 7	Y = 429
	N = 135	M = 99	N = 3

H = 326			
Crazy Cones	Y = 147	L = 0	Y = 201
	N = 90	M = 17	N = 36
H = 130			
Striking with a Paddle	Y = 342	L = 139	Y = 427
	N = 94	M = 286	N = 9
H = 11			
Air Raid	Y = 154	L = 0	Y = 145
	N = 5	M = 4	N = 14
H = 155			

Student perception of activity level did not correlate with the researcher's observation of activity level. According to student perception, all but two of the activities kept them in the high (vigorous) activity level. Students felt safe in all activities except for Hockey and Soccer Skill Practice. The majority of kids enjoyed all of the activities. Students did not enjoy activities that required them to rotate out or sit out for a certain amount of time. Students enjoyed activities that provided a chance for all to participate at the same time, even if the physical activity level was low. Students did not enjoy activities that required mostly VPA as much as those that allowed them to mix up moderate with vigorous activity. On a side note, the researcher noted that during most activities students were laughing, smiling, and participating fully and appeared to be enjoying themselves. The researcher found it interesting when some students voted "no" when asked if they enjoyed the activity. The researcher also noted that some students' peers swayed their votes.

Summary

The criteria for optimal group sizes was for students to be moderately to vigorously active for 20 or more minutes during the 30 minute lesson, students would be safe during the activity, students would enjoy the activity, and all students would be able to participate. The research shows that whole group activities with class sizes below twenty-five meets all criteria. Activities that require students to be inactive for a certain amount of time do not meet the criteria. This occurs when group sizes are larger than seven or when there are more teams than space or equipment. Groups that are smaller than seven students proved to be safe, enjoyable, and provide 20 plus minutes of MVPA. Stations provide high MVPA and are best when using six or more stations.

Although PE teachers do not control the size of each class that comes to PE, knowing which group sizes work best helps the PE teacher plan lessons more effectively. Even large class sizes can be broken down into smaller groups for more student enjoyment, higher MVPA, and safe activities. Knowing ahead of time what works best saves PE teachers from trial and error.

The results from this research are supported by a study by Simons-Morton, Taylor, Snider, and Huang (1993, p. 262). They observed 20 schools to “determine the type of activities and the amount of moderate to vigorous physical activity fifth grade students participated in during physical education classes.” The results were that “No school provided the recommended 50% of class time in moderate to vigorous activity” (p. 264). They also stated, “In contrast, we have observed exceptional elementary physical education programs elsewhere ... Teachers organized the students into small groups, maximized equipment sharing and participation...” (p. 264). The researcher found 14

activities that provided 67% or more of class time in MVPA and 18 activities that allowed opportunity for all students to participate at the same time.

This research could be taken a step further to see what motivates students to be active. There were a few occasions that the researcher noticed the type of music playing caused students to dance while they waited in line or on the side line, increasing their MVPA. The researcher also noticed that certain students were more active when they were with certain other students. Linking motivators to optimal group sizes could increase MVPA even higher than 67%.



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Appendix

Activity Descriptions

1. Relays – Classes are divided into six groups of students working in teams. Each team member takes turns running, skipping, galloping, or speed walking down to a cone and back. The first team to have all members finish their turn wins. In Bucket Brigade Relay students formed a brigade and passed equipment (one piece at a time) from one hula-hoop to the next. The team to move all equipment to the other hula-hoop and return to the cone wins.

2. TAG – Four different TAG games.

Bean Bag TAG requires all students to be taggers. Students try to tag others by slinging beanbags at their feet. If a student is tagged, the student runs to a wall and performs five exercises of his/her choice and then returns to the game.

Your It TAG starts with six taggers, each holding a fluff ball. The taggers chase other students and tag them with the fluff ball. The tagger then drops the ball and the person tagged picks it up and becomes the tagger.

Traffic Light TAG starts with six taggers. Two taggers have red balls, two taggers have yellow balls, and two taggers have green balls. The red ball taggers chase students and tag them with the ball. When a student is tagged with the red ball, he/she must stop moving. The yellow ball taggers chase students and tag them with the ball. When a student is tagged with a yellow ball, he/she must move in slow motion. The green ball taggers tag students who are stopped or moving in slow motion, which allows those students to move again.

Line TAG starts with four taggers in the center circle of the gym. Each tagger has a ball and chases students around the gym. All students must follow the lines of the gym (as if they are cars driving on a road). When a student is tagged, the student becomes a “roadblock” and sits on the line. The game ends when all students have been tagged or trapped between roadblocks, or when all taggers have been trapped between roadblocks.

3. Hockey – Floor Hockey divides students into teams of two or three. The gym is divided into five game areas. Each game has two teams play against each other (team A and team B) and each team member has a hockey stick. Inside each game, the area is split into three sections: one section by each goal (sections one and three) and one section in the middle (section 2). Each team has a goalie, midfielder, and fullback. Team A has a goalie in section one, midfielder in section two, and fullback in section three. Team B has a fullback in section one, midfielder in section two, and goalie in section three. Each team member can only touch the puck if it is in his/her section. When a team scores a goal, all students rotate positions.

Scooter Hockey is played in one-on-one games and two-on-two games. Each student has his/her own scooter to sit on and a small hockey stick. The one-on-one games use one set of cones as a goal. One player tries to score into the goal while the other player plays goalie. After each goal, the students switch positions. The two-on-two games use two sets of cones. One member of each team is a goalie, while the other student tries to score. After a goal, all students switch positions.

4. Straddle Ball & Tony Chestnut – Two activities combined into one lesson. The lesson begins with movement to “Tony Chestnut”, a song that using homophones as cues to move. For example, when students hear “Tony Chestnut knows I love you” students

touch their toes, knees, chest, head, nose, and eye and then cross their arms over their chest and point at someone. The song is 3:34 long and speeds up half way through.

Straddle Ball can be played as a whole group or in smaller groups. Students make a circle with feet spread apart. Each foot is touching the neighboring student's foot on either side.

A ball is thrown into the middle of the circle and students try to hit it between another student's legs. If the ball goes through a student's legs, he/she runs to get the ball, brings it back to the circle, and the game over starts over. Up to five balls are added during the game to increase the challenge.

5. Three-on-Three Basketball – Students are put in teams of three. Two teams play against each other on one end of the gym, allowing two games at a time. Teams that are not playing sit out and wait for their turn. Each team must pass the basketball to each of the team members before a shot could be made. If the ball was stolen during a pass, the count has to start over when the team gets the ball back. One point is given for each basket made. The game plays until one team scores five points.

6. Skating Pad Practice – This lesson gives students practice putting on wrist guards, knee pads, and elbow pads before the actual skating lesson begins, allowing more time to skate. Once students have all of their padding on, they may run around the gym and practice falling safely using their pads. Pads are put on and taken off three times.

7. Clean Your Room & Chicken Dance – Two activities combined into one lesson. This lesson started with the “Chicken Dance.” During the 2:35, students performed the dance by flapping their hands as beaks, flapping their arms as wings, shaking their bottoms like tail feathers, and clapping their hands. During the chorus of the song, students skipped around the gym until it was time to perform the chicken moves.

Clean Your Room is a game where students throw equipment (balls of all sizes, frisbees, footballs, etc) into another teams' "room." The gym is split into four rooms. Students throw the equipment when the music is on. When the music stops, students cross their arms in front of them and stand still while the teacher counts equipment in each room. The team that has the least amount of items in their "room" wins. The equipment is divided out again and the game starts over.

8. Skating – Students put on pads, helmets, and rollerblades and skate around the gym. It is a time for students to decide their activity and participation level by what they feel most comfortable doing. Some students race, some hold on to walls, and others skate backwards while some just skate in circles around the gym.

9. Switcheroo – Four polyspots (spots) are set up to create a square and one spot is put in the center. One student stands on each of the spots. The student in the middle yells out "Switcheroo" and all students must move to a new spot. The student remaining without a spot goes to the middle and the game starts all over.

10. Corn Toss- Students work in pairs with one hula-hoop and two beanbags. The hula-hoop is placed at a small distance from the students. Each student gets a turn to throw the beanbag into the hoop. The student who gets the beanbag the closest gets to throw first the next time. Students run to the hoop to retrieve their beanbags and then run back to a certain distance they choose to throw from. Students may challenge themselves by trying different types of throws and moving farther from the hoop.

11. Ribbon Dancing – Each student holds a ribbon wand and moves the wand around to make the ribbon dance. Students follow the teacher first and then create their own moves.

12. Stations – Different areas of the gym are designated for specific activities. Students rotate through all of the different stations during class time, staying at each station two to seven minutes. The amount of time spent at the station depends on the number of stations. Offering more stations allows students to experience more activities but for shorter periods of time. Offering fewer stations allows students to spend more time at an activity, but participate in fewer activities. Three different station lessons.

Four aerobic stations lasting five minutes each: 4-square (four students try to keep a ball out of their square while trying to eliminate another player so he/she can move up toward the “king” square), climbing rope (students took turns climbing on the three ropes), relay races (students worked in pairs or groups of three running from one cone to the other and passing off the baton), and frog toss (students stand on a spot and throw their frogs towards a bucket to earn the spot).

Four volleyball stations lasting four minutes each: serving over a net, beach ball keep-it-up using setting and bumping, bumping to a partner, and learning how and when to rotate.

Six review stations at three to four minutes each: climbing the rock wall, beanbag toss (students roll the dice to determine how close they can get to throw the beanbag toward the bucket), taking turns climbing three ropes, giant cup-stacking relay (students take turns running to a set of three giant cups, stacking them up, running to a second set, stacking them up, performing five jumping jacks, and then running back to down stack the cups), spider golf (students use a miniature golf club to hit a spider ball to a spot), and scooters (students use a scooter to travel back and forth between cones).

13. Pacer Test – An endurance assessment. Students run 20 meters to the other end of the gym. Each time students hear a beep they run back the other way. A partner counts every time the running student makes it to each end before the beep. After a seven beeps, the time decreases between beeps. Students run until they fail to complete a lap two times. This assessment is done in groups of six. Once all students have stopped, the next group of students runs. It generally takes two days to assess all students

14. Volleyball – Classes are grouped into four teams and teams play through a volleyball tournament. Two teams play at a time while two teams sit out and wait for their turn. The tournament is double elimination, so when one team loses two games, they are no longer in the tournament and sit out the rest of class. Rally scoring is kept and the game plays until one team scores seven points and is up by at least two points. This lesson generally takes two days.

15. Air Raid – Each student has a pin to protect (with the exception of four to five students who wait on the sideline). Students may set up their pins anywhere in the gym except outside the black line that forms a rectangle around the outer edge of the gym. Several balls are scattered around the gym. Students can pick up one ball at a time and throw it at someone else's pin. If the pin gets knocked down, the student picks it up and takes it to a person on the sideline. That student comes into the game and sets the pin up where he/she chooses. The game is played the entire class period.

16. Crab Soccer – Classes are divided into four teams. All students get into crab position. One student from each team comes into the center circle of the gym to “kick-off.” Another student from each team comes into the court as a “helper.” The rest of the students are along the line that represents their goal. When the whistle blows, the students

in the middle move, in crab position, and try to kick the ball into another team's goal. The helper assists the kick-off person and can move around the court. The students along the goal line try to prevent the ball from crossing into their goal. The "goalies" cannot leave the line. When a goal is scored, teams rotate and put a new person into the helper position, the old helper moves into the kick-off position, and the old kick-off person rotates into the goalies.

17. Giant 4-Square – Classes are divided into four teams. The gym is divided into four squares and numbered one through four. The square numbered four is the "king" square. Each team plays in one of the four squares. The team in the "king" square serves the ball. Each team tries to keep the ball out of their square. Teams can hit the ball as many times as they need to, can play the ball off of the wall, can kick low rolling balls, and can allow the ball to bounce three times in their square. A team is "out" if the ball bounces four or more times in their square, they cause the ball to hit the ceiling, or a teammate steps into another team's square. When a team is out, they must rotate to the number one square and all other teams rotate accordingly. The king square does not rotate unless they get out. The game starts over after every rotation.

18. Soccer Skill Game – Students are paired up. One has a pin and the other has a ball. The student with the ball tries to knock down his/her partner's pin. Once the pin is knocked over, the pin player runs to find another pin player to help protect his/her pin and the ball player takes his/her ball and tries to knock someone else's pin over. The game is timed for three minutes. At the end of three minutes if there are any pins left standing, the pin team wins, if not, the ball team wins. Teams switch position and the game starts again.

19. 4-of-a-Kind – Students are paired up and designated a card (Ace through King). A deck of cards is scattered on one side of the gym turned face down. One person from each pair runs to the cards and turns one over. If the card is his/her card, it is taken back. If the card is not the designated card, it is turned back over and the student runs back to his/her partner. Play continues until each team finds all four of the designated cards. Placing is given by which team turns in their cards first and so on.

20. Crazy Cones – Classes are divided into two teams, the ups and downs. An even number of cones is spread around the gym, half up and half down. The ups move around the gym turning all the cones up and the downs move around the gym turning all cones down. Each round is timed for two minutes. At the end of two minutes, teams return to their designated sides and the cones are counted. Whichever side has the most cones in their designated position wins. Teams switch and the game starts again.

21. Striking with a paddle – Students are each given a ping-pong type paddle and a balloon. They follow the teacher's moves while staying inside their own hula-hoop. After some practice, students are given a challenge with their balloons. When they meet the challenge, students may switch their balloons with a fluff ball or small wiffle ball and perform the same challenge. For the remainder of class, students partner up and use all three items with a partner.

