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# Class Size Matters: Impact of Class Size on Differentiating Instruction In High School Physical Education

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Class Size Matters: Impact of Class Size on Differentiating Instruction In High School Physical  
Education

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Submitted in Partial Fulfillment of the Requirements for the Degree

Master of Science in Education

School of Education and Counseling Psychology

Dominican University of California

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Signature Sheet

This thesis, written under the direction of the candidate's thesis advisor and approved by the coordinator of the master's program, has been presented to and accepted by the Faculty of Education in partial fulfillment of the requirements for the degree of Master of Science. The content and research methodologies presented in this work represent the work of the candidate alone.

Heather Brabo

Date December 6, 2013

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## Abstract

Physical education has evolved from playing recreational games to an environment focused on learning through movement. In 2005 the State of California adopted California Physical Education Content Standards, creating a rigorous academic experience, including physical, cognitive, and psychological standards. Class size has an effect on differentiating instruction to meet the needs of all students.

The purpose of the study is to examine the effects of class size on differentiating instruction and reaching all students. The literature reveals although small class size is recommended, it is not a reality in physical education.

The study is qualitative in design involving a purposive sample of physical education teachers employed in a local suburban high school in Northern California's San Francisco Bay Area. Their teaching experience spans from two to over twenty years.

Findings show common themes of challenges physical education teachers face impacting the quality of instruction, preventing differentiated opportunities for diverse student population. Common themes include issues around teacher ability to deliver quality instruction, student engagement, providing timely, positive feedback to students, large class behavior management, assessment, and providing a variety of teaching styles.

## Chapter 1 Introduction

Stepping back and observing my students reflect upon a physical activity and the relationship to the content of focus, I see Jason, lying on his stomach playing with a crumpled piece of paper. Jason was completely off task and totally disengaged. I ask him what he thinks about the reflection question and receive a blank stare in return. Jason has an Individualized Education Plan (IEP) and is identified as a student with special needs. He, along with the thirty-nine other students, with unique learning needs, makes differentiating instruction a mighty feat. As a physical education teacher, I am passionate about fitness and health. My goal is to give my students the knowledge and ability to be fit for life. In my fifth year of teaching standards-based instruction to high school physical education students, my greatest challenge is reaching all students.

### Statement of Problem

The increased class sizes in physical education, and the added demands on physical education teachers to instruct populations with diverse needs, one begins to understand the complexity of making physical education meaningful and effective in creating awareness within students of their choices in maintaining physical fitness. A diverse population challenges the physical educator to develop and deliver differentiated lessons to meet the needs of all learners.

### Purpose Statement

The purpose of this study is to examine the major issues that teachers face in differentiating instruction for large classes. This study examines the experiences of secondary physical educators and the impact large class size has on teaching. The study examines the challenges of differentiating instruction for a diverse population of students, managerial complications,

teacher's perception of student engagement, implementation an assessment for learning model, safety of students as well as the support from administration and colleagues.

### Research Question

When class size is increased in the area of physical education, what are the effects on student engagement and student learning? How does a teacher manage the unique needs of a diverse student population with class sizes that are between 38 and 42 student?

### Theoretical Rationale

#### *Theory of Classroom Assessment For Learning*

Chappuis and Stiggins (2002) defined assessment for learning as a tool to promote greater student achievement. Assessment for learning occurs during instruction rather than at the end of a unit. Students become a part of the process, which can help motivate students to become more proactive in their own learning. According to Chappuis and Stiggins, "In assessment for learning, both the teacher and students use classroom assessment information to modify teaching and learning activities" (2002, p.4). Assessments are used as a tool to inform instruction and tailor instruction to individual student needs. It involves reflection on teacher effectiveness. By utilizing assessment for learning students are able to become more involved in their own learning. Students are able to set goals, make decisions associated with their own learning.

Another major component of assessment for learning is effective teacher feedback. Teacher comments that are direct and focused on the level of student performance and that specifically identify areas of need can impact student engagement and motivation to learn. For feedback to be most effective teachers should give it immediately and face to face with the student. The teacher should describe why an answer is correct or incorrect.

Students must ask themselves three questions in order to self-assess. The first question should be “Where am I trying to go?” Learning targets should be clearly identified for the students by the teacher so that students are better equipped to answer the first question. Teachers should continually help to clarify the learning goals throughout the lesson or unit. Displaying the learning objectives in the classroom as well as provide students with exceptional examples of intended outcomes. The second question students should ask is, “Where am I going?” Students can utilize the formative assessments received from teacher feedback to determine where they are in relation to the learning targets and evaluate their target goals. Finally, the last question students should ask in assessing for learning is “How do I close the gap?” Assessing for learning helps students identify what they need to do to move forward in their learning. Students must create their own goals, analyze assessment data and develop an action plan to achieve intended goals. It is important for students to learn question and answer strategies to advance their learning. An example includes asking; how can I get help? What resources do I need? What specific help do I need?

Assessing for learning helps all students achieve intended learning goals and gives the student more responsibility for their learning. Assessments become a part of the learning process rather than a reward or punishment. Assessment for learning enables greater engagement in learning and promotes self directed learning.

According to Chappuis and Stiggins (2002), there are 3 questions and 7 strategies of assessment *for* learning;

Where am I going?

1. Provide students with a clear and understandable vision of the learning targets.
2. Use examples and models of strong and weak work.

Where am I now?

1. Offer regular descriptive feedback.
2. Teach students to self-assess and set goals.

How can I close the gap?

1. Design lessons to focus on one learning target or aspect of quality at a time.
2. Teach students focused revision.
3. Engage students in self-reflection, and let them keep track of and share their learning.

Quality physical education programs with a standards-based approach must use assessment to guide instruction. Students must be provided with feedback based on formative assessments. Units, lessons, IEP modifications, and differentiating instruction should keep assessment for learning at the forefront for optimal student engagement and learning.

According to Albert Bandura's Social Cognitive Learning Theory (SCT), a person patterns his thoughts, feelings or actions after another person who serves as a model" (Bandura, 1969, p. 213). SCT is applied in the education system each day. The teacher is the model or identification by which students imitate observed behaviors. SCT suggests that students can learn through observed behaviors assuming that the modeled behavior is given with the students' attention, they retain the behavior, the production of the behavior and the student has motivation to learn the new behavior. Perceived self-efficacy places a large role in whether students will put forth effort and actively engage in the learning environment. Teachers must provide constructive feedback on a student's level of proficiency so that perceived efficacy can be built. Teachers should provide students with the knowledge and strategies they need to be successful in completing a task.

Physical education teachers must model the behaviors of many objectives; actions of the days lesson, promoting life-long fitness and encouraging 21<sup>st</sup> century life skills such as collaboration, critical thinking, and problem solving. Issues with large class sizes may prevent retention of the desired behaviors. One major factor effecting self-efficacy in a large class size is the amount of students who receive direct feedback in a timely manner. Teachers may be unable to convey desired behaviors to students in large classes due to many different learning styles and needs of diverse students, distractions of behavior management and the teachers need to build rapport with students to understand individual motivation.

#### Assumptions

The researcher believes that class size impacts student learning. There is increased difficulty in differentiating instruction for students with special needs or other special populations. Larger class sizes create many barriers to effective teaching such as; the inability to provide effective feedback to all students, the challenge to build rapport and create personal connections, an increase in behavioral management, as well as the lack of accessibility to technology in the classroom.

Grading assessments in a timely manner is also a struggle for teachers with large classes. Student safety may be compromised in classes with 40 to 1 student teacher ratio. The researcher also believes that there is lack of support from administration in reducing the number of students in a physical education class to a more manageable number.

#### Background and Need

In light of a meta-analysis of the research literature focused on class size reduction, there is evidence of little to no impact on student achievement. However, none of Hattie's (2005) research looked at the impact of class size reduction in physical education. The research mainly

looked at student achievement in Math and English as well as kindergarten through third grade. Hattie's (2005) research also suggests the reason class size had a low effect on student achievement could be due to the lack of teacher development and use of instructional strategies geared towards smaller classes.

In addition, several research articles reveal the need for a class size reduction specifically in physical education based on teacher opinions. Gross (2010), discovered several adverse themes associated with crowded physical education classes at the elementary level. There is need to look in to the issues high school physical education teachers face with large classes.

#### Summary

This study investigates the impact of large class size on learning in physical education. Based on a survey conducted regarding the impact of class size in high school physical education several themes emerged from teacher responses. These themes clearly indicate the need for change to reduce the number of students per teacher caseload so that physical education teachers can create positive and productive learning environments.

## Chapter 2 Review of the Literature

### Introduction

Information on the effect of large class size in physical education was gathered from academic library searches using online resources. Research information is organized in the following categories: Historical Context, Review of the Academic Research, Statistical Information, and Internet Sources each subheading and discuss the appropriate literature topically.

### Historical Context

California Department of Education recommends historical practices of approximately 40 students per class. However in 2005 California State Standards for physical education was adopted in middle and high school curriculum yet class size remains the same.

### Academic Research

#### *Large PE Classes*

Gross (2010) researched the effect on teaching large class sizes in physical education. He described and researched the variables affecting the teaching in large class sizes. The purpose of the study was to examine the demographic data collected on elementary physical education programs as well as to evaluate the attitudes of elementary physical education specialists teaching large class sizes.

Participants in the study were 132 elementary physical education specialists teaching in public schools in the southeastern portion of the United States. Participants were all in attendance of Health Physical Education Recreation and Dance (HPERD) conference and all responded to a questionnaire during the conference.

Gross used a questionnaire to gain insight from other physical education specialists. The questionnaire was given to each attendee upon check in at registration. The questionnaire was



divided into two parts. The first part of the questionnaire asked logistical questions about the teaching arrangements. There were questions on the demographics of students, the county they were teaching in, if they taught at a public or private school, how many PES Physical Education Specialists (PES) taught at their school, the number of aides that assist in the physical education class and enrolled in the school, etc.

The second part of the questionnaire requested that participants rate their opinion of their class demographics and their concerns over the large class size on a Likert-scale. For example, PES were asked about limited ability to deliver quality daily instruction, limited time students were engaged in moderate to vigorous physical activity, the ability to deliver positive or specific feedback, concerns about equipment availability and the time spent on classroom management.

Information from physical education specialists was gathered during a HPERD conference. Each participant was asked to complete a questionnaire.

The data collected was then averaged in to a mean and displayed on a table format.

Results from the questionnaire showed an overwhelming response of teachers strongly agreeing on statements such as; Large class limits my ability to deliver quality instruction, large class size limits my ability to provide corrective and positive feedback, large class size forces me to spend more time on class management, large class size limits deeper learning for all students.

This research shows the negative impact large class size has on the PES to deliver quality and meaningful learning opportunities.

### *The Quest for Quality*

Chappuis, Chappuis and Stiggins (2009), discuss the five key components to quality instruction through the Assess for Learning Model. The first component is “clear purpose.” The instructor must have a clear picture of what they are assess and why. The instructor must also know for

whom the assessment will inform. Assessments can inform the instructor on whether students understand material or they may inform the student on what areas they may need to improve upon or areas of strength. The second component for assessing for learning is having “clear learning target.” The instructor must organize learning targets in written form so that all students understand what is expected when assessed. There are several forms learning targets can be assessed in; knowledge, reasoning, performance, and product targets. The third element is having a “sound assessment design.” This means the teacher chooses the best form of assessment for a particular learning target. “Effective communication of results” is the fourth component when assessing for learning. This means that the teacher must report descriptive feedback to students to let them know where they are in terms of meeting learning targets. Feedback should be given as immediate to assessments as possible. Language of rubrics should help students indicate what they need to improve upon and what they did particularly well. The last element of assessing for learning is to have “student involvement in the assessment process.” This means students should monitor and take responsibility for their own learning. Teachers should design learning targets so that students can use them to self-assess and set goals. It is important for teachers to establish a routine where students can monitor their own progress on learning targets.

The assessing for learning model is an important component to teaching and student success. It allows the students to become more proactive in their learning. It also ensures that the teacher is able to reach all students and differentiate to varying learning needs. However, this model is difficult to execute when class size is so large in physical education. Immediate teacher feedback is a challenge for teachers of large class size.

*Getting to Know Your Students in Physical Education*

Fisette's (2012) discusses the importance of getting to know your students' thoughts and feelings in physical education. The article examines ways in which educators can include formative assessments within instruction to nurture self-confidence and positive self-image while also increasing the enjoyment of physical education. Fisette suggests that students should be given the opportunity to share their experiences and express how they feel as participants. It is important for the instructor to get to know students so that they can make informed decisions about differentiating instruction to meet the needs of individual students. Fisette states; "effective physical education teachers are better able to gain students' cooperation and respect when they know them as individuals"(2010, p.43). In order for students to feel comfortable sharing their feelings in a physical education class or with the instructor, students must feel the learning environment is safe. Teachers must take students feeling seriously. When prompting students to share, teachers should start by making responses anonymous. Students should have the option to write or word-process reflections without writing their name on it. This gives the students more freedom to share what they feel without feeling judged. By creating a safe learning environment the groundwork for an "integrative cycle: the more comfortable and safe students feel, the more willing they are to share their thoughts and feelings, which ultimately informs the teacher on how to establish and even safer spaces based on student input" (Fisette, 2010, p.43).

The author provides strategies for gathering and using student information to guide further instruction. The methods suggested include; personal profiles of each student, student snap shots, journal writing, participation identification, and drawing. These responses can inform future class discussions, journal reflections and future assessments or lessons.

The article suggests that teachers who instruct with a student-centered model approach are better able to design instruction to meet the needs of a diverse population of students. By implementing this model, teachers are able to promote positive feeling of students and increase a positive self-image of student abilities in physical education.

Creating and maintaining a safe learning environment with a student-centered approach can also be a challenge for physical educators with large class sizes due to the wide range of diverse learners in one class. Learning the dynamics of each class period and developing lessons to meet the needs of each class period or overcrowded classes take a lot of energy and dedication. Getting to know each students varying needs through formative assessments and learning the needs to five different class periods proves to be a hefty task.

#### *Assessment in Large Class Size*

Gallo, Sheehy, Patton and Griffin (2006) researched what physical education teachers believed to be the benefits and barriers of assessing students in physical. The purpose of their research was to examine teachers' perceptions of assessment and the reluctantly of some teachers to assess knowing its purpose. The problem the teachers face is the challenges of assessing in physical education.

Researchers chose to interview and gain perceptions of 53 physical education teachers attending a seven-hour workshop on middle school physical education assessment as part of a professional development day. Participants engaged in a facilitated discussion in small groups chosen at random. They were asked to brainstorm the benefits and barriers of assessing students in physical education. Based on the brainstorming session, common themes were developed and discussed openly with the entire group of participants.

Benefits include; grade justification, showing students improvement, accurately measuring skill and understanding on content and sets expectations for students. It was commonly believed that assessments provided evidence of learning. The barriers teachers agree upon were understanding how and what to assess, the lack of time and the main concern of the participants was the external barrier of having too many students. Many found assessing their over-crowded classes as an unmanageable task.

The researchers offered management suggestions and teaching strategies for teachers but also encouraged physical educators to become more involved in scheduling committees. They stressed the importance of advocating for smaller class size. Although the research was geared towards including assessments in physical education curriculum it also illustrates the barriers and challenges physical education teachers face with large class size. It shows the importance of assessment in enhancing instruction.

#### *Including All Children in Standards-Based Physical Education*

Johnson, Kasser and Nichols (2002) write about the inclusion of standards-based instruction in physical education and the challenges some teachers face with a diverse student population. “An educational standard determines the level of achievement desired for an educated person. These standards provide direction in what students should know and be able to do” (Johnson, 2002, p.42). The article looked into the obstacles teachers face when dealing with a diverse students population and varied ability levels and the implementation of standards-based instruction. Obstacles include developing standards-based programs and formulating benchmarks for student achievement as well as the inclusion of students with disabilities. Students with Individualize Learning Plans or IEPs have programs that may not allow for a difference in the level of achievement per standard. Johnson suggests that when standards are applied to all students, the

teacher must then decide on appropriate benchmarks and allow for modifications to those benchmarks in order to include diverse learning needs of individual students. The article states; “professionals must be open to accepting the different ways in which competency may be demonstrated...” (Johnson, 2002, p.43). Physical educators must also be mindful when creating assessments for a diverse student population. Students should have multiple opportunities to demonstrate proficiently in an assessment.

This article had strong points of differentiating instruction for a diverse population to achieve standards-based instruction however; many of those points were geared towards the demonstration of a physical task. This article was written in 2002, prior to the current standards of physical education which include cognitive learning of more advanced topics. The purpose of the article is to encourage physical educators to be cognoscente in designing a standards-based approach to teaching and assessing the curriculum. Students should be provided with differentiated instruction to meet individualized needs, including students with varying IEPs. One challenge physical educators may face in doing so is having a large class size. With a large class size comes an increase in the diversity of the learners. Following through with assessments and providing students with multiple opportunities to show proficiency can be challenging to keep track of. Physical educators with large classes must be organized and proactive with students who are less than proficient.

#### *The Physical Education Deficit in the High Schools*

Rhea (2009) writes of the decline in high school physical education programs. The purpose of her article is to address the attitudes and perceptions among administrators, teachers and students have regarding high school physical education. High school physical education can and should

provide students with daily fitness and movement opportunities as well as a knowledge base on leading life-long fitness.

Several key factors play a role in contributing to low expectations and negative attitude of high school physical education. One major factor is the lack of administrative support. “We have seen a trend over the past 20 years of administrators expecting physical education teachers to take on large numbers of students in a crowded environment and control them without assistant...” (Rhea, 2009, p.3). Reduction in physical education class sizes would lead to less disruptive behavior and increase time on moderate to vigorous physical activity. Rhea suggests a solution to these difficulties would be to reduce classes of 40 or more to less than 30 per class. There is a lack of expectations coming from high school administrators and their understanding of high school physical education. Many time administrators show this through taking away the physical educators classroom, the gymnasium, for other non-physical use such as; assemblies, science fair, book fair, and so on. This takes advantage of the teacher and the program.

Low expectations for high school physical education also come from state and governing officials. In some states, students who participate in after school athletics, drill team, cheerleading and ROTC earn physical education credits. These students are missing out on valuable fitness for life lessons.

Rhea (2009) offers a solution to gaining more respect as a discipline. She states the importance of speaking up as an organization. It is our collective responsibility to educate others in the significance of our subject matter. Physical education teachers should maintain the integrity of their program and their teaching philosophy. Inviting administrators to visit lessons is one way to inform. Physical educators should also maintain high expectations of students. Educating parents, administrators and students about the importance of physical fitness and

education. Physical fitness and education is important in preventing disease related to inactivity. Physical inactivity leads to obesity, and conditions such as: heart disease, high blood pressure, high cholesterol, cancer and Alzheimer's, among others.

This information illustrates the importance of a quality physical education program needing the support of administration and community leaders. Many teachers find large classes difficult to manage, taking away the focus or quality of the lesson. The author suggests a solution would be to give teachers a more manageable number of students to educate, from 40 plus students to 30 or less. Physical education is more than playing sports, it is about educating students on life long fitness.

#### *Reward or Punishment? Class Size and Teacher Quality*

A 2013 study by Barrett and Toma looks at whether class size is used as a policy of principals and school administrators in response to demonstrating teacher effectiveness. The study is looking to see if principals' consider a teacher's prior effectiveness when determining class size for that teacher. Barrett and Toma (2013) hypothesize that teachers will be rewarded with a smaller class size or punished with larger class sizes due to their effectiveness in teaching. The longitudinal study examined this question with data from teachers' prior effectiveness and student performance. The implications of this research support that notion that principals choose class size for teachers strategically, placing more students in classes of teachers with prior evaluations of performance that indicated higher effectiveness. This study examines class size as an exogenous variable and questions the estimates of past research models on class size. The implications of this study, more importantly indicate that teacher evaluations should be held in high regard. As signified by a principals choice in determining class size and giving effective teachers more students, further attention should given to the evaluative process for teachers and



the implications for “rewarding” or “punishing” teachers with class size. The study also implies the need for research on effective teachers over their teaching career.

This study did not focus on the specific effectiveness of teachers in physical education but it does raise a point of the power of the principal. There are many points in which reducing the number of students in an overcrowded physical education class reduces the effectiveness of the teacher when dealing with issues of safety, space and equipment, behavior management and diverse learners. These challenges impact the learning environment and lower the effectiveness of the instructor in teaching standards-based instruction so that all students are at or above proficient.

#### *Critical Thinking in Physical Education*

Blitzer (1995) highlights the importance of including and promoting critical thinking in physical education even when classes are impacted and or space is limited. The purpose of the article was to educate physical educators on incorporating critical thinking and critical thinking strategies into the curriculum. She suggests changes need to be implemented in traditional educational designs to facilitate more meaningful learning experiences.

Spectrum teaching involving teacher supported, student-centered, guided discovery provide unique opportunities for student learning. It is important for learners to realize they can be their own researcher and can utilize the teacher and other students as resources. Blitzer also suggests tradition models of teaching physical education only emphasize the skill mastery component of learning which neglects the cognitive, affective and social development of the learner. Critical thinking can benefit all domains of learning. It is important for physical educators to promote critical think due to the ever changing nature of the subject matter, the increase in diversity of students and the influx of students per class.

*University Students*

Exeter, Ameratunga, Ratima, Morton, Dickson, Hsu and Jackson (2010) looked at the increase in student enrollment and as a result an increased class size of several undergraduate courses at the University of Auckland, New Zealand and the teachers perspective on student engagement.

The problem presented by the researchers is that with growing class size come heightened responsibilities of the teacher. Aside from motivating students, creating lessons with fluidity, being organized and developing quality assessments, teachers with larger class sizes are presented with a more diverse students and learning needs. A challenge these teachers face is ensuring engaging course content.

The purpose of the study was to look at teaching techniques, styles, and tools that engage students in large classes. The researchers looked to answer two main questions; How is student engagement achieved in vary large classes? More deeply, what teaching techniques can be used effectively during lecture, how are courses organized to engage students, what types of assessments are used to engage students? At the University of Auckland, 10 professors of first-year undergraduate courses reaching the highest enrollment numbers of over 500 students were invited to participate in the study. Of the 10 courses six participants agreed to participate. Professors from Law, Medical & Health Sciences, Science and Commerce were among the disciplines involved.

Candidates were given a detailed outline of the study. Participants were the asked to submit their course books and other related materials for comparative document analysis by the lead author of the paper. The research assistant interviewed participants. The interviews were structured in three parts; introductory section to provide background information about the participant and the course they taught. The next portion of the interview invited participants to

share examples of engagement incorporated into the curriculum. The concluding section of the interview allowed participants to comment on the use of student engagement in very large class sizes. The overall purpose of the interviews was to discuss the vast domains of teaching, learning and assessment.

Face-to-face interviews were conducted between December 2007 and March 2008, each lasting approximately 1 hour. Audio recordings were utilized in the interviews, which were then transcribed and manually coded using thematic analysis.

The author used a table to illustrate the themes that developed as a result of the interviews. The author used qualitative data based on the interviews of the professors.

The major themes developed from the research interviews were 1. Course management, including administrative information, class size, tutors, supervision in over-flow lectures and examination marking. 2. Engagement including student-lecturer interaction, encouragement, motivation and on-line learning. 3. Lecturers; specifically number of lectures and experience. 4. Diversity; In student population varied cultures, learning abilities and diversity of students. It was found that teachers who included classroom discussions and tasks to be completed individually or in small groups had more student engagement. Findings also show that assessments and lectures relating to real-world situations or to environments familiar to the student were key to engagement.

This study showed the importance of relating material to students. Differentiating instruction conducted in safe learning environments is key to engaging students.

*Technology Integration in Secondary Physical Education: Teacher Attitudes and Practice*

Gibbone, Rukavina and Silverman, (2010) looked at the integration and use of technology in the educational setting of physical education as well as the relationship of physical educators attitude

and practice. The study suggests many ways in which physical educators can incorporate technology into their teaching practices. Suggestions include preparing, generating, administering and reporting information such as fitness scores, class participation, and motor skill rubrics for student and teachers.

Additionally physical educators can include content-specific technology such as word-processing for items such as newsletters, student portfolios as well as utilizing technology through fitness assessment databases, physical education department Web pages, content specific software and multi-media systems as well as visual presentations could be incorporated into daily lessons.

The study surveyed 616 middle and high school physical educators across the United States questioning attitudes towards utilizing technology in the setting of physical education. The factors looked at in the survey were: Physical Educators' Perceptions of Importance and or Relevance of Technology; Physical Educators' Technology Proficient; Contextual Factors and Physical Educators Training all of which indicated a positive consistency. The study indicated the major barriers pertaining to teachers' use of technology were budgetary constraints at 81% followed by class size at 48.7%. The study showed that if barriers were not a factor in utilizing technology in a physical education setting, 90.8% of teachers agreed they would use technology. This study relates to the research of the impact of class size and differentiating instruction- with the constraints of large class sizes teachers find it challenging to utilize various forms of technology to strengthen teaching of content.

### *Teaching Diverse Students*

An article written by Cruz and Petersen (2011) discusses the marginalization of physical education and provide several solutions for problems that arise. The article investigates how the

attitudes, beliefs and behaviors regarding physical activity and exercise differ among cultures. The suggested strategies are geared to help all students feel comfortable in physical education classes and further to instill the importance of life long health and fitness. The strategies help teachers demonstrate respect for all cultures in the hopes that students are not marginalized for their culture or affiliation of culture.

The Surgeon General's Report on Physical Activities and Health identified some cultural differences related to physical activity... Overall, people with more education are more active than people with less education, men are more active than women, people who are more prosperous are more active than those who are less well off, and non-Hispanic Caucasians are more active than blacks or Hispanics (Cruz & Petersen as cited in the U.S. Department of Health and Human Services, 1996, p. 21).

This report is a reflection of what teachers might see in their classes. Cruz and Petersen suggest teachers should not assume any racial identity based on physical characteristics of a student. It is imperative for teachers to not make assumptions of students based on race or ethnicity. Getting to know students and encouraging all students to get to know each other is a positive way to promote a positive class culture.

Other strategies include ways in which teachers can positively interact with students who are also economically disadvantaged. Keeping extra supplies on hand and discretely offering them to students who need them is an easy way to help. Teachers must make students aware of the access to technology at school when assigning computer-based assignments.

An often broadly diverse population is, students with special learning needs or physical adaptations. Suggestions for these students include knowing your class compositions so that one may plan lessons with the inclusion of adaptations or modifications. Offer help to students with special needs by asking; “what can I do to help?” so that they can accept or deny rather than to assume they need help.

The message of this article is that by providing students a safe and inclusive environment teachers are better able to reach all students in teaching the components of physical education. Cruz and Peterson conclude by stating, “Respect towards an understanding of students’ differences goes a long way towards bringing credibility to a physical education program” (p. 24).

#### *Reducing Class Size and Improving Learning Outcomes*

Hattie (2005) examined the research literature on class size reduction and the implications for improving student learning. The purpose of his paper, a meta-analysis of 10 studies, was to critically evaluate previous research claims that class size reduction has little to no effect on learning outcomes. Additionally through his analysis of the research literature he offers an explanation of how learning outcomes can be enhanced in smaller classes. Hattie asks not “what are the reasons for a low effect-size,” but rather “why are the effect-sizes from reducing class size so small?”(Hattie, 2005, p.388) He suggests that the reasons for a low effect on student learning is that teachers maintain the same practices of teaching large classes in the smaller reduced class size, therefore learning outcomes remain unchanged. The conclusion of his research shows that class size reductions can result in meaningful increases in more individualize instruction, higher quality instruction, room for innovation, and student-centered teaching which increases teacher moral, provides less disruption and behavior management issues as well as

increases in student engagement throughout lessons. More specific research is needed to provide more incite on the impact of class size reductions in physical education.

### Summary

Overall the research reveals several issues concerning large class size in physical education.

There is a consensus among physical education teachers that class size does impact learning.

Several concerns immerged from the research. Physical educators found the use of technology, providing individual feedback to students, promoting critical thinking skills, handling disruptive behavior, keeping students engaged, the quality of assessments and quality of program were are areas that increased their level of discomfort in considering themselves effective teachers.

More general research on class size contradicts the findings of the physical education articles. This research indicates little to no impact on student achievement. However, this research primarily looked at the elementary school level and focused mainly on Math and English, not a standard based approach to teaching physical education.

## Chapter 3 Method

### Research Approach

This study explores the impact of large class size on differentiating instruction in a high school physical education setting. The research relies on surveyed responses of California suburban public high school physical education teachers in the greater San Francisco bay area experiencing the many challenges of reaching all students. This study was conducted in the response to the current demands of physical educators to teach and assess standards-based instruction and outdated practices of class size caps prior to the creation of California State Standards in physical education. This study was based on the experiences and opinions of physical educators in a district mandating standards-based instruction in all disciplines.

Based on current research, class size has little to no effect student achievement. However, the studies did not examine physical education specifically and the unique challenges physical educators face on a daily basis. The research also suggests that teachers did not change teaching practices when class sizes were reduced. This study takes into consideration those unique challenges and teachers' attitudes.

In this study, physical education teachers were given demographical questions as well as a survey. The survey asked a variety of questions related to the educators attitudes and opinions' of the challenges of teaching large class size. The survey data was analyzed (see Appendix) and several themes were determined.

### Ethical Standards

This paper adheres to ethical standards in the treatment of human subjects in research as



articulated by the American Psychological Association (2010). Additionally, the research proposal was reviewed by the Dominican University of California Institutional Review Board for the Protection of Human Subjects (IRBPHS), approved, and assigned number 10174.

#### Sample and Site

My target subjects were high school physical education teachers in a suburban district. Teachers teaching experience varied among the group from two to twenty-six years. Education varied with in the group as well. Three of the five teachers had a master's degree while the other two had bachelors degrees, all had their teaching credentials and one of the teachers is National Board Certified in physical education. The average class size of the 5 teachers is 38.6 students. The average of their largest class size is 40 students. All but one of the teachers teacher either 9<sup>th</sup> grade or 10<sup>th</sup> grade physical education, the fifth teacher is part-time at the high school level and part time middle school teaching 6<sup>th</sup>, 7<sup>th</sup>, 8<sup>th</sup> and 9<sup>th</sup> grade students.

#### Access and Permissions

The observations were conducted within the bounds of the classroom. The survey was completed during a department meeting. Teachers involved in the surveys and observations received written and verbal explanations of the observations prior to their participation. Permission to conduct the survey was requested in writing from the principal and teacher leader. The participants in this study are members of a physical education department at a local high school. Participants were formally asked to participate in this study through written form via e-mail. All were informed of their rights as a participant and all agreed to participate. The study was conducted during a staff development day. Time was set aside to allow all participants to complete the survey within a 20-minute time frame.

### Data Gathering Strategies

I conducted a survey with all five physical educators, using a variety of questions relating to differentiating instruction, use of technology, behavioral issues and classroom management, assessment scores, and special populations students. I also gathered data by observing students in my own class. Observations served as a basis for developing several parts of the survey.

### Data Analysis Approach

Information was gathered using the data from the surveys and classroom observations. Teachers had an opportunity to share or elaborate after the survey in a comments section. Recurring themes from teacher responses and personal researcher observations were noted. Surveys, written comments and observations were analyzed. Similarities and differences were identified and compared in order to determine whether differentiation occurred for all students.

## Chapter 4 Findings

### Description of Site, Individuals, Data

Five physical education teachers from a suburban school setting in the San Francisco area participated in the study. Jennifer has a bachelor's degree and teaching credential. She has taught physical education for seventeen years. Her average class size is 40 students and her largest class size is 41 students. She teaches 9<sup>th</sup> grade full time. Wendy has a master's degree in educational leadership as well as a National Board Certified teacher of fifteen years. Her average class size is 40 students and her largest class has 42 students. Wendy is a full time sophomore physical education teacher and department Teacher Leader. Michael has a bachelor's degree and teaching credential. He has taught physical education for twenty-six years. He is a full time sophomore physical educator and his current average is 37 students per class and his largest class has 38 students. Haley has a masters of Science degree in education and is in her second year of teaching. She splits her time teaching between middle school and high school 9<sup>th</sup> grade physical education. Her current class average is 40 students and her largest class has 41 students. Jessica has master's degree in educational leadership she has been teaching physical education for eleven years. She is currently teaching part-time in physical education and is athletic director full time.

### Themes

#### *Large Class Size Limits My Ability to Deliver Daily Quality Instruction*

Three of the five teachers felt they “strongly agreed” that their large class size limits their ability to deliver quality instruction daily. One teacher “agreed” that the large class size limited her ability to deliver quality instruction and one teacher felt “neutral” on the matter. The researcher believes a reduced ability to deliver quality instruction daily is linked to several factors related to

behavior management. Redirecting students to stay on task can take time away from planned learning opportunities. One participating teacher points out another concern impacting the quality of instruction; “Safety. I am constantly concerned about safety in my classes with large numbers. It is difficult to prevent accidents with large classes.”

*Large Class Size Limits the Amount of Time Students Are Engaged*

Four of the five teachers “strongly agreed” and one teacher agreed that large class size impacts the amount of time students are engaged in learning. The researcher believes space and equipment needs may be the cause of lack of time in learning activities. One participant explains: “Whether it’s technology use in the computer labs, (each lab has 31 computers total. 10 students must wait) or playing a sport like badminton (with 9 courts available 4-5 students must rotate in to play) there will be students inactive waiting for a turn.”

There is an inevitable amount of wait time with the growing class sizes. Teachers struggle to provide students with multiple exposures to the content through a variety of vehicles while faced with barriers such as lack of equipment, supplies, and technology.

*Large Class Size Limits My Ability To Deliver Specific Positive Feedback To All Students*

Four of the five teachers “strongly agreed” while one teacher “agreed” that large class size limits their ability to deliver specific positive feedback to all students. One teacher points out, “ If I spent just one minute with each student to check in or give feedback, it would take me 40 minutes- the length of a class period...” The school where the research had taken place has 50-minute class periods in which students have 5 minutes at the start and end of every class to change- so the length of instructional time is 40 minutes. The California State Standards for physical education are academically rigorous. Physical education must embed the content standards in to physical activities so that students are learning while moving. Using assessment

for learning to guide quality instruction while providing feedback on the students' cognitive abilities and learning as well as the physical tasks being performed one would not be able to provide specific feedback to all students in the allotted time.

*With Large Class Size I Spend More Time on Behavior Management*

Four of the five teachers "strongly agreed" while one teacher "agreed" that they spend more time on behavior management in larger classes. One teacher participant said; "Large class size does not allow the teacher to interact and provide feedback to all students individually. It increases the amount of behavioral issues which forces the teacher to shift their attention away from the content and on to classroom management." Physical education classes transition in different locations and often an open environment meaning a physical educators classroom can be different spaces; a gym, a field, the track, pool or other out-door space. The confines of the learning environment are more flexible than other content areas. A mobile cart and roving white-board is often used to follow students from a classroom to the gym or outdoor space. The researcher believes students feel the flexible structure in a physical education class can result in increased disruptive behaviors. Many times physical educators find themselves redirecting negative behaviors, stopping academic lessons to handle behavioral management or cutting out activity time when poor behavior continues. Taking time out of class to redirect negative behaviors takes focus and the teacher's energy and focus away from students who need extra attention. This impacts the teacher's ability to maintain a learning culture and differentiate the instruction for a diverse population of students because time was taken out of class to handle poor behavior thus shortening the lesson.

*I Am Able To Grade Assessments and Provide Feedback To All Students*

One teacher felt “neutral” on the matter of grading assessments and providing feedback to all students. Whereas three teachers “disagreed” and one “strongly disagreed” that they were able to grade assessments and provide feedback in a sufficient amount of time. One participating teacher states; “ Given the knowledge and skills that must be formatively assessed and summative assessed in a Standards Based Instructional Design model, and given the underlying academic learning targets- I feel that physical education classes should have the same cap as science and health classes.” She goes on to say; “ Creating a physically and emotionally safe environment for learning becomes increasingly challenging with large class size.” There is a demand for teachers in this district to follow the Standards Based Instructional Design Model (California Department of Education, 2013) and the added pressure to assess all students for learning. The goal is to prepare all students for a proficient or higher level of understanding content. Teachers at this school assess every student and provide feedback to all students, most importantly the students who are below proficient- so that they may learn from their mistakes and reassess based on teacher’s feedback. With 200 students per teacher caseload the ability to provide feedback to all students in a timely manner becomes a challenge.

*I Am Able To Step Outside The Command Style Of Teaching*

All five teachers “agreed” that they are able to utilize various teaching strategies outside of the traditional command style. In summary this shows that these physical educators are able to handle some of the challenges of teaching large classes and are willing to create a more engaging learning environment. Teacher utilization of various teaching styles allows students to become more engaged in the content. The ability to utilize various styles of teaching helps to differentiate instruction to a variety of learners.

## Chapter 5 Discussion /Analysis

### Summary of Major Findings

Factors attributed to large class size affect the teacher's ability to provide quality instruction in physical education. Behavior management increasingly becomes an issue with more students enrolled in class. All of the teachers incorporate varying teaching strategies to reach all students. They are knowledgeable in implementing teaching strategies to meet the needs of a diverse student population. The ability to provide direct, specific feedback to all students is a challenge when teachers are responsible for more than 40 students per class. This key finding contradicts the teachers ability to utilize *assess for learning model* (Chappuis & Stiggins, 2002). Although they have the best intentions the volume of students impact their ability to assess for learning in the most productive conditions.

### Comparison of Findings to the Literature

Only one research article that addressed this issue found the top four items gathered from this data were similar to data gathered on elementary school students. Gross (2010) researched effective teaching in large classes in physical education in elementary school. His results mirrored teacher responses in the present study.

### Limitations/Gaps in the Research

Much of the research on class size was not specific to physical education. Additionally it was hard to find current research articles of quality that addressed class size in physical education. In terms of data collection, the present study is limited in scope to the number of physical education teachers who were willing to complete a survey on this topic. All participants came from one school, thus limiting application of findings to only the school district involved in the study.

### Implications for Future Research

Further research is needed with an increased sample size of high school physical education teachers involved in the data collection process. Future research should also address the benefits of lowering class size with standards based instruction as well as assessing for learning in physical education.

### Overall Significance of the Study

This study shows the challenges physical educators face in creating quality instruction with the ability to assess, differentiate instruction and provide feedback to all students. With administrative support, lowering the student caseload of physical educators will enable teachers to instruct more efficiently and tailor lessons for varying class dynamics and diverse student populations.

### About the Author

Heather Brabo has an undergraduate degree in Kinesiology with a concentration in physical education in addition to her California teaching credential. She has been teaching in San Francisco suburban high schools for five years. Her interest in this research came about when she saw class increases and demands of providing academically rigorous standards based instruction for all students. While providing quality lessons with the focus on learning targets, formatively assessing students to guide instruction, providing individualized feedback for diverse learners, taking time out of lessons to redirect off-task behaviors, supplying all students with learning materials and utilizing a variety of teaching strategies has become increasingly difficult with 40 plus students in every class. She believes it is in the best interest of the student (and the teacher) to reduce class size to a more manageable number of 30 or fewer students.



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Appendix

Response to Survey

Question Please check the box you feel strongest about for each statement.	Strongly Agree (5)	Agree (4)	Neutral (3)	Disagree (2)	Strongly disagree (1)
Large class size limits my ability to deliver daily quality instruction	111	1	1		
Large class size limits the amount of time students are engaged in content	1111	1			
Large class size limits my ability to deliver specific positive feedback to all students	1111	1			
I am differentiating my instruction daily		1111		1	
I want more teacher development to focus on other teaching styles; Reciprocal, Self-Check, Inclusion, Learner Initiated and Guided Discovery	1	11	1		1
I feel support from administration, fellow non-physical education-colleagues, and parents in creating quality curriculum			11	111	
Large class size creates problems with providing adequate equipment and or technological resources.	11	1	1	1	
I am effectively teaching all students the standards based instruction	1	11	1	1	
Large class size limits my ability to deliver specific positive feedback to all students	111	11			
I am able to grade assessments and provide individual feedback to all students in a timely manner			1	111	1
I effectively reach my most diverse population of students daily in learning content knowledge		1	11	11	
I am able to build a rapport with all students		11	1	11	
With large class size I spend more time on behavior management	1111	1			
Large class size limits the learning opportunities of student	111	11			
I am able to utilize a variety of teaching strategies in my instruction	111	1		1	
Large class size limits the learning opportunities of student	111	11			
I am able to step outside of the command style of teaching; utilizing any of the following teaching styles; Reciprocal, Self-Check, Inclusion, Learner Initiated and or Guided Discovery		11111			